

CHILD-MAN IN BRITAIN

BY

F. ASHFORD

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CHILD-MAN
IN BRITAIN

AN ENGLISH PRIMARY SCHOOL

By A. K. PRITCHARD & F. ASHFORD

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Educational Times.

CHILD-MAN IN BRITAIN

BY F. ASHFORD B.Sc.
JOINT AUTHOR OF "AN
ENGLISH PRIMARY SCHOOL"



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NOTE

FOR the contents of this little book I am much indebted to the contributors to *Archæologia*; to Sir John Evans' works; the work of the Hon. John Abercrombie on Bronze Age Pottery; the contributions of Sir Norman Lockyer to *Nature* on Stone Circles and Cromlechs. I have also used the work of Mr. Munro on Lake Dwellings; of Mr. Blackmore on the Blackmore Museum; of Messrs. Hubbard on Neolithic Dew Ponds and Cattle Ways (though their work is a subject of controversy); and the guides to the prehistoric galleries in the British Museum. The greater number of the drawings are from objects in the British Museum; in the case of objects which were not available, I have borrowed from the above-mentioned works. The British Museum, the Ethnological Section of the Fitzwilliam Museum, Cambridge, the Blackmore Museum, Salisbury, the Torquay Museum, the Hazlemere Museum, afford specimens of great interest to students of primitive and prehistoric man.

F. A.

March 9, 1913.

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FOREWORD

IN England when three parts of the country was darkened with forest, when strange creatures—lions and tigers, the Irish deer, and the great hairy elephant with the noble tusks—roamed about and had their day before they passed into extinction, certain little handfuls of people, not half a step above the animals in manners and intelligence, lived in their own curious animal-like way.

Many of the animals were set on being what they were, and have continued so, or disappeared ; but these particular people were set on being what they were *not*, and through years which only the gods would not be weary to count they have partly achieved what they wanted, and are Us ! With additions and subtractions in the way of fleshly descent, there probably exists some strain of blood—so called, more modernly, germ-plasm—between us and them.

They lived in the closest proximity to their mother Earth. She dominated them and oppressed them—starved them in winter, cosseted them in summer—but in this climate her sterner mood predominated, and these Child-People had a strenuous youth of it. The difficulties of the path, contrariwise, caused them to persevere in it ; there were no inducements to linger, one comfort after another had to be snatched out of the cruel environment and closely cherished. When it became a necessity to a higher idea of living, their minds were stirred to fresh

Child-Man in Britain

conquests over things. The open weather was exchanged for the appropriation of a natural cave, "his" because he had it and the pleasure of it. Possession warranted him in the exclusion of all his enemies and the admission of his very few friends. From his cave to his hut of wood and turves, to his house of wattle-and-daub or of superior stones, we can trace him ; and there he is twenty ages or so nearer us than his poor progenitor, the digger with the "eagle-beak" flint.

Out of the horrors of winter, the horror of the beasts and the dark woods their home, the horrors of flood and tempest, the bewildered Child-People conceive awesome demons of evil intent towards their helplessness, and with appetites hardly to be satisfied. The hunger of the bare season drives them very likely to devour their kind, and terror drives them to devote vicarious victims to the hungry devils around. Out of the pleasant sun, the promise of spring, the blessings of summer, they conceive the beneficent influence of man-befriending godhead, to whom the grateful Child-People offer sacrifice of corn and meat with thanksgiving. In the battle of the elements man may stand a chance of being left in peace. The good is scarcely stronger than the evil. How should they spy a hidden unity in diversity and postulate a One-ness behind the Many-ness, an Omnipotence behind the warring forces, a Thinker behind the solid things of earth ? Yet all the while a many-eyed curiosity peers into the secrets and daring fingers handle the unknown, while the bulk are content to Be, a few are discontent to Know, and a few to Be Better.

Foreword

The tediously constructed edifice of knowledge and culture our children are called upon to build again. But speedily, with the ease of the practice of their forefathers and fortunately, with the confidence of a cleared and trodden path. Yet if the stones of the foundations are omitted the wall will scarcely stand, even with added buttresses, and the broader and deeper the foundations the greater the superstructure that can be raised on them. The slower the child's development, the greater his promise ; the better animal he is at seven, the more promising boy he will be at seventeen. Let him wrestle with mother Earth and subdue what he can of her. Let him be creature, cub, what not of wild vigorous life, sturdy of limb, broad of chest, untrammelled by our conventions, learning to master himself in order to master them over which it is said he shall have dominion. The soil, stones, streams, trees, fruits of the wild earth, and the things of air and sun that bring them forth are his heritage. Not the tables and chairs, and knives and forks of our manners and perfections. The swift foot, the slide, the leap—the wheeled wagon and the sled are his, not the railway engine and the automobile, though savagely he delights in the black art of their velocity. The steep hill is his to climb and subdue, the distance to see over, the nuts and fruits to eat, the spot of wild ground to camp on, the cave to possess. His instinct is towards and among these things, his delight is to live "cavily in a cave," it is of the essence of childhood. Here he kings it and gathers his possessions round him and does his queer cooking, most sane and wise to his own judgment ; dons his

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queer adornments, fabricates his queer tongue—and lives unconscious of the strange tall moderns who think they are instructing him how to be a modern citizen. Let him learn in his own ways and by his own devious footpaths. He will have none of the dusty high road to learning ; he will pasture in his own fields and lose himself to us in his own obscure wanderings. He has no part with our dress and our conversations, with our gloves and shoes and our philosophy. His life has its roots hidden in the earth and its branches in the sun ; beware lest you pluck it too soon to starve in the vase for the adornment of the house. His instincts are true enough, they will take him by the hand and let him thread the mazy byways of the past. Our way is straight and parched with the tar-spray of adult habits. Let him alone. God will tell him the how and the when.

We know well enough not to interfere with his pre-natal life, we allow nature to do her work in her own best way. Afterwards we shall also beware of too much interference, lest the protected child should find himself in a less happy situation than the neglected child, the fathered than the fatherless. The bonneted, booted infant trailing beside his nursemaid envies with a bitter envy the uncultivated sprite paddling in the warm dust of the summer roadway. Disinherited he looks at the fair domain of free play, sunshine and heat, wind and cloud, berried hedge and mantling pond, bonfire and woodshed, rickyard and paddock. The cottager has all these, and he has only the painted walls of his nursery and the order of the garden. “Take away these baubles.” “Give me health and

Foreword

a day and I will make the pomp of emperors ridiculous."

In and through his little community of playmates he will learn the strict laws of give and take, the age-old doctrine of fairness—his plain idea of justice, an eye for an eye and a tooth for a tooth, the emblem of the balances in the hand of the impartial goddess. The fair play of the child's camp is in healthy contrast to the perverse despotism of the idol of the nursery. Grown-ups save his weakness from the shocks of strength, his littleness from contact with bigness, and he becomes inflated with a sense of his own power—pretty enough in a baby, but how tiresome and unheroic in a boy or man. Let alone, his will is unable to raise the stone, his foot is chilled by the brook, his way impeded by the briar—only the amiable dog will attend him in amused service. He is little, and is taught to realize himself as such ; but his pride is large and impels him to strive to be great, and having subdued his own will to that end he may subdue others to his will, and even learn that *that* is not his highest aim.

There is nothing so melancholy as idleness. Never amuse your children ; occupy them, or leave them to occupy themselves. All parties, toys, entertainments devised purely for the amusement of children are the beginning of boredom. It is the child's business to be doing, to be learning how to live after the simple manner of his ancestors ; he is not a baby, but a man of prehistoric tastes. He lives in the Dark Ages and the Age of Heroes ; a grunter, a namer, a deviser of charms, a singer of sagas, he passes on his way to adolescence—and do not fancy

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that you can make him other than a prig by pressing modern humanity or science into service in his instruction. Neither be afraid that this blood-thirsty little ruffian will never turn Christian. Let him do and think after his own manner, and he will subdue his laziness to his curiosity, his inclinations to his creative impulse, his selfishness to his generosity, and then turn about like the great conqueror for new worlds, striving for his share in making the Is-to-Be.

CHAPTER I

FLINT-WORKINGS

FROM the basement bed of the Red Crag of Suffolk certain "eagle-beak" flints have been dug up. One is shown (Fig. 1). It was made from a small flint. One end is rounded and covered with the natural flint crust, and the other is of the inside material shaped into a curved point and somewhat battered at the end. It is considered that these flints were shaped by the hand of man. They would be formed by two or three strokes at one end of an oval flint, chipping off three pieces and leaving a triangular point. Good imitations have been made recently. There seems great probability that they are the work of a very primitive people; and if so, Man existed in Britain in early Pliocene times. This Man has been named Dawn of the Stone Age. We must imagine him of low intelligence, hairy, and unclothed, grubbing for roots with his eagle-beak implements, seeking out some natural cave to sleep in, and reduced in numbers by the numerous animals, now extinct, who preyed upon him.

The other tool, like a hand-axe, shows more workmanship. The crust of the flint has all been removed. It was found in the London Clay floor near Ipswich (Fig. 2).

There is a long interval of time between the date of these discoveries and that of the River-drift and Cave-earth implements which follow them.

Child-Man in Britain

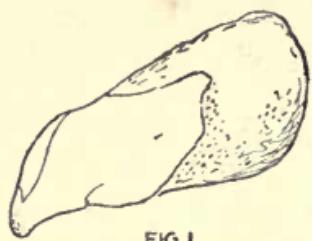


FIG. 1

Eagle-beak flint.
basement (bone-) bed,
Crag Suffolk.



FIG. 2

Small implement.
London Clay floor.
Suffolk.

Dawn of Stone Age.

Near Gravesend an Old-Stone Age workshop has been found. The River-drift gravels were discovered to be full of flint chips and cores, and some finished and half-finished implements were found. These primitive people only used the flints that lay scattered on the surface of the ground, or that were

Flint-Workings

just below the surface. As these exposed flints are the hardest to work, they had more difficulties to overcome in shaping a good flint flake than the New Stone Age man, as well as less skill in dealing with the material.

A squatting figure, clothed in a rough hairy skin garment, is grubbing for flints. He selects some of regular shape and then picks one up, places it across a large flint and strikes it in the middle with a large flint pebble of great hardness. Suddenly the flint is divided, showing two black smooth surfaces. He stands it up on end on his flint "anvil" and with a smaller pebble or "hammer-stone" strikes the fresh surface near the edge. He gets a good flake of the rough crust to split off. With a couple of strokes to the left and right of the first, he clears away two more small flakes of crust, and makes a ridge between them. Above and behind this ridge he strikes again, and hits off a nice new flake with a strengthening rib down the middle of its back and two new sharp edges. When they are blunt, he will have to take a fresh flake, for he has no idea of sharpening them by working the edge or by grinding it. He is a very skilled worker for the period, but if he wants a larger tool, a scraper or an axe, his task is not so straightforward. He takes perhaps his other half flint, flattens it by removing successive flakes from opposite sides, and then works little chips off the edges until they are roughly sharp. A flint scraper and a triangular tool or hand-axe are shown from Stamford Hill. Their irregular surfaces distinguish them from later work. The marks can be seen quite plainly where the chips have been

Child-Man in Britain



Flint flakes.



22 in.



Black whetstone

4 $\frac{1}{2}$ in.

Cave earth. Kent's Cavern Torquay.



22 in.



33 in.

Stampford Hill. London, N.
Old Stone Age.

struck off the edges. Other remains of the River-drift men have been found at various places—at Salisbury and near Axminster, in the gravels of

Flint-Workings

London, and the brick-earth of Hoxne in Suffolk, for example.

To the question, "For what were they used?" Sir John Lubbock replies, "To what use could they *not* be applied?" They may have laboriously cut down trees, scooped out canoes with the assistance of fire, grubbed up roots, cut food, broken ice, and killed animals and enemies. Sling-stones have been found associated with them, and they were probably used in the following very simple way. The slinger took a long strap of leather and wound one end round his forefinger and held the other between his finger and thumb. In his left hand he held his sling-stone, placed it in the loop of the sling, and, holding both arms above his head, whirled the weapon round and round, and letting go the end suddenly at the right moment he would send the stone flying to the bird or rabbit he wished to kill. Much practice gave accuracy to his aim.

A stick with a leather strap lashed to the end of it may have been used, the stick being held in the hand and the strap let fly as in the first-mentioned sling. Or the sling-stone may have been inserted in a slip at the end of a stick which was whirled round the head until the stone flew out from its grip. This was naturally a very difficult weapon to control and would require an immense amount of skill.

There are large caverns in the compact limestone in various parts of England—in the Devonian limestone of South Devon, in the limestone of Somerset, and in the Carboniferous limestone of Yorkshire. In many of these caves a certain deposit known as Cave-

Child-Man in Britain

earth has been found to contain implements similar in workmanship to the River-drift implements, and considered to be of the same period. Kent's Cavern at Torquay, the Brixham Cavern, Wookey Hyena Den, Somerset, are examples of the dwellings of Cave Men. They were all used again at later periods, and the Cave-earth is usually the lowest of a series of deposits on their stalagmitic floors. With the human tools are found also bones of certain beasts of prey, now extinct, the cave-lion and cave-bear, the mammoth, wild bull and Irish deer ; other creatures now extinct in Britain—the brown bear and the grizzly bear, the bison, the hyena and the wolf—have left their bones as relics of their life or death, according as they killed or were devoured. These creatures must have inhabited the cave during the periods of the Cave Man's absence ; for one family of men may well have perished during those strenuous times, and years may have passed before another sought out the same abode. Hunger-starved lions may have killed the defenceless Child-Men, taking possession of the shelter of their cave and only leaving it when a stronger family should discover it at a time when the lion or bear was abroad. They would barricade the entrance to their stolen dwelling with a pile of loose stones perhaps, and greet the former owner with a fire of missiles.

The Cave-men of Kent's Cavern must have traded for their flints. The nearest are on Haldon, at least ten miles away as the crow flies, where an outlier of decayed chalk rests upon Greensand. The decayed chalk consists almost entirely of flints, which are

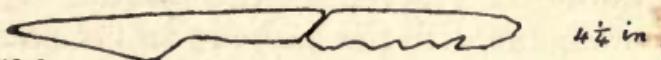
Flint-Workings

FIG. 1



Part of Harpoon head.

FIG. 2

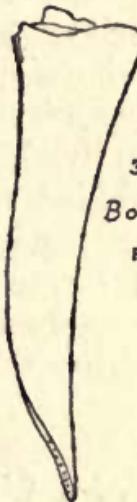


Harpoon head,
barbed on one side.

FIG. 3

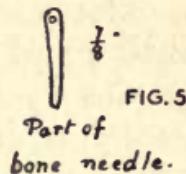


Bone pin.



Bone awl.

FIG. 4



Part of
bone needle.

FIG. 5

Torquay Museum.

Old Stone Age

now dug out for road-making. It required no skill to find them. They must have bought them unbroken, for cores of flint and odd flakes of working as well as flake tools are found in the Cave-earth. They made also bone harpoon-heads, two of which are shown (Figs. 1 and 2). These were lashed to a

Child-Man in Britain

wooden handle with sinews, and were very likely used in fishing, for Kent's Cavern is but a short distance from the sea. At Happaway Cavern, hard by, part of a fish backbone was found. Where there was no systematic fishing it is very likely that fish abounded, and on a calm day a raft of logs lashed together, or a canoe of tree-trunk with the hollow burnt out, would have served for the practice of the art. Two men, one with the harpoon and the other with the wooden paddles, would have conducted the enterprise. Waiting and drifting over the clear water, at last they espy their prey, and with lightning swiftness, emulating the gull, it is speared, and brought flashing, wriggling and twisting into the boat. Harpoons are simpler than nets, and the idea of stabbing a fish is more primitive than that of snaring it. The Cave-men lived entirely by fishing and hunting and by grubbing roots—stones for pounding the roots have been found. They clothed themselves, as will be seen in another chapter, entirely with skins. A bone pin is the only implement found for securing the garment in this Cave-earth (Fig. 3).

The caves of La Madeleine in France were inhabited by people of a higher degree of culture. They flaked flints with great skill; they had many large ones at hand on which to practise. They picked cup-shaped holes in softer stones; sometimes they even practised grinding of flints on sand-stone. But their greatest skill was shown in fashioning bone implements. A dagger handle in the form of a reindeer and knife-handles ornamented with drawings of the reindeer and mammoth are

Flint-Workings

examples of their work. The bone or deer-horn was worked with a sharp-pointed flint implement ; the drawings are made with the cut of a pointed flint upon the bone. They are very spirited and decorative, showing a high degree of feeling. These Cave-men, though of the Stone Age, were surprisingly clever, and their skulls indicate a marked development of the more intellectual centres of the brain, being smaller in the jaw and broader in the forehead than would be expected. No skulls remain of the Cave-men or River-drift men of Britain.

The men of the New-Stone Age began to dig for their flints, and while some of them still lived in caves (there are remains of their habitation in the "Black Band" of Kent's Cavern, for example) yet most of them took themselves to the chalk downs where flint was in abundance. They learned to build huts and could live in larger communities. The high downs were the home of the pasturing animals—the wild horse, the red deer and the wild ox, all good for food, and they were more or less free from the wolf, the hyena and the wild bear. The little pits and huts that they learned to build were by no means so protective as the recesses of a cave, but the larger number of men learned to erect earthworks and palisades for their safety. They digged the flints out of the chalk, finding that the fresh ones were easier to work than those that had been hardened by exposure to the air.

At first they merely digged irregular pits, but by and by, with generations of accumulated experience (for man has learned very, very slowly), they

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began to sink shafts and to work at certain superior layers of flints. The flints occur in the chalk, not anyhow, but in the lines of bedding ; one layer known as the “fire-stone” layer (used for the gun-flints and strike-a-lights) is exceptionally good, and some of our New-Stone men had discovered and worked it. At Grimes’ Graves near Brandon, Sussex, within Cissbury Ring (Fig. 1) and at St. Martinsel’s Hill, flint mines have been discovered and explored. It is possible that the “Dene Holes” are flint mines. An indication of the section of a shaft is shown (Fig. 3), and a plan of one of the pits at Cissbury with its radiating galleries is given (Fig. 2). There are also illustrations of the implements used at Grimes’ Graves.

Let us picture the flint miners at work. They have heard from some men making earthworks down the hill, that some distance below the surface they should find the layer of prized flints, and they have spent many days digging out a pit and shaft to get to it. The pit is in the pure white chalk, and all round is dazzling chalk debris. Men stand round naked—for the weather is hot and the work is warm, and clothes cannot easily be replaced—hauling up baskets of chalk rubble by means of ropes of plaited leather. They seize the basket and stand clear while the contents are tipped out, for they do not want their feet to be bruised upon the instep. Below are three men. The shaft is not very wide for them all, but they are rather timorous and company gives them courage. They must labour, cut off from their fellows, depending upon the others above to get them out of their underground workshop. Two

Flint-Workings

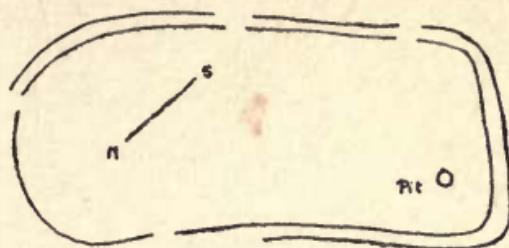


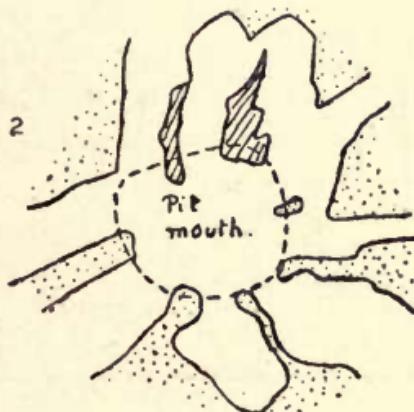
FIG. 1

Plan of
Cissbury
Rings.



Section
across
ring.

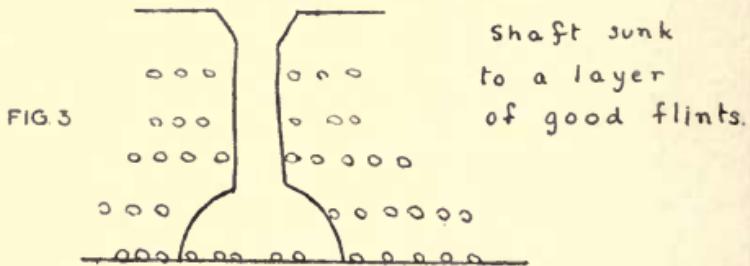
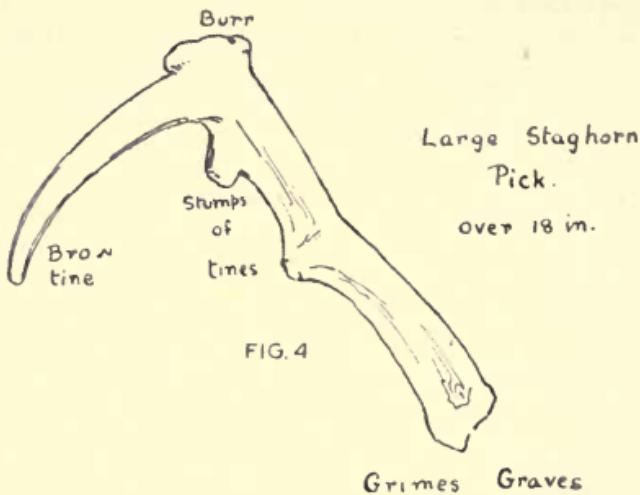
FIG. 2



Plan of
'Pit' marked
above =
Flint-mine
with radiating
galleries.

men are loosening the chalk with big wooden or stone wedges driven into the cracks with their stone hammers. With picks of stag-horn (Fig. 4) they break apart the lumps and rake them out. The

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third man is stooping, and with the bladebone of an ox he is shovelling the lumps of chalk into a rough basket of withies which the men above are waiting to pull up. They let down the rope into the blue shadowy pit, he ties it on the basket, and up it goes, bump—bump—to the top. His two companions give a shout—“Hey, hey.”

Flint-Workings

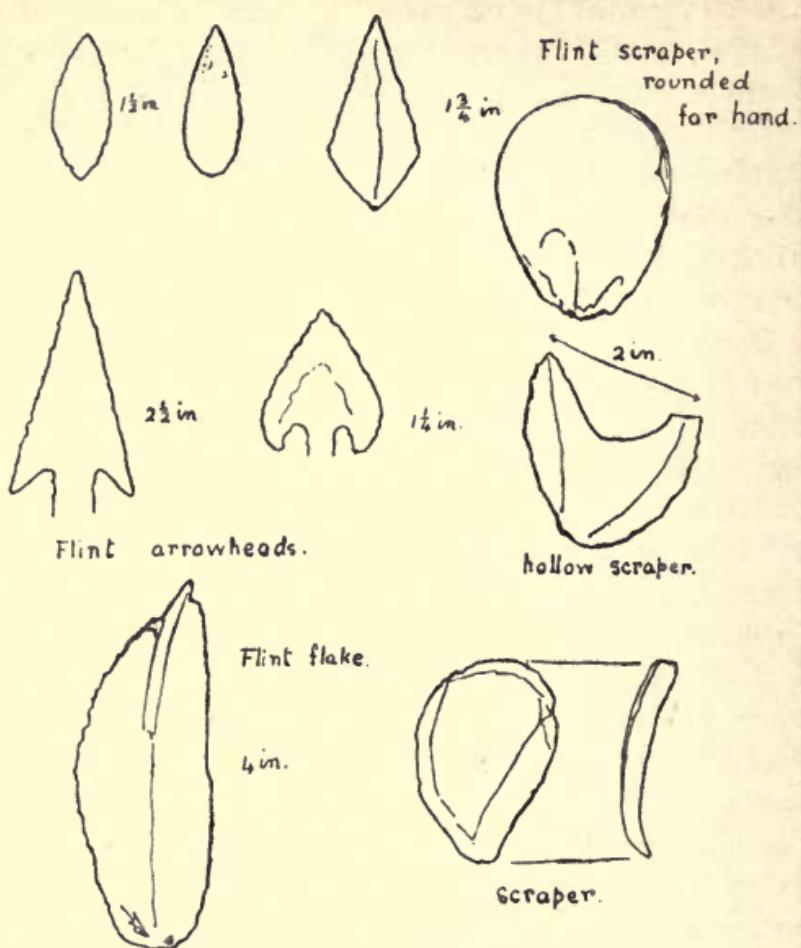
The man above answers it and knows that the fire-stone flints have been "struck."

The flint-workers are called together, for the flints should be worked straight from the mines before they have time to harden. The flints are levered out of the chalk one by one, another basket of rubble is cleared away, and then the basket is filled with new flints, which are hauled up. Next one of the men below takes the rope, twisting it round his hands, those above give a united steady pull and help him to climb the rugged sides of the shaft. By placing his feet against the wall of chalk he steadies himself and does not get bruised. The most courageous is pulled up last with his heart in his mouth and his face turned towards the blue for fear of the queer situation below.

Now the hammer-stones are fetched and the flints are struck in two as a preparation for work. The blows are next struck round the edge of the new clean surface, splitting off flakes of the crust all round. Successive blows next split off good clean flakes, which may be saved for rougher uses or may be trimmed up into arrow-heads. Some are then laid flat upon the anvil-stone or block of wood and gently chipped over the surface with a fine bone chisel. Next the arrow-head is held edgeways and by pressure of a bone awl upon the edge, fine chips are splintered off each side, leaving the edge both sharp, serrated and firm.

Flint arrow-heads of various shapes are shown, the earlier of a simple shape and the later ones barbed. A skilled hand must have been required to fashion

Child-Man in Britain



New Stone Age Ireland & Yorkshire.

the latter with stone and bone implements out of a lump of flint.

It is likely that certain men of special ability would make the more complicated specimens. A rounded scraper for dressing skins, a flint-flake which may

Flint-Workings

have been mounted and used as a knife, a hollowed scraper the incurved edge of which was used for smoothing and shaping the stems of arrows, are shown.

As the mining progresses, horizontal galleries are driven out radially from the central pit, with the fire-stone flint layer as their floor. The galleries are not very high. The labour of removing the material is great, and no more is done than can be avoided. The men crouch or lie at their work as miners are sometimes obliged to do at the present day in difficult places. It is dark in the galleries, and a man shapes a little basin of chalk in the mine, and with a wick of dried rush and a little fat got from his wife's cooking he makes a lamp something like a modern "night-light." His little chalk cup is shown, and with it a hammer-stone, two bone chisels for the finer work in preparing an arrow-head, a flint knife with serrated edge with which he very likely shaped his chalk cup and cut his stag-horns to make picks. A large pick and a small pick are shown (Fig. 4). The large one was for use with two hands. The miner gets possession of it when the slain deer is brought home from hunting; he breaks it off from the stag's skull, taking care not to injure the "burr" where it is united to the bone. The burr is to strengthen the weakest part of the pick—namely, where the pointed part joins the handle. The brow tine serves admirably for the point, the beam will make a strong handle; only the superfluous tines must be removed, and all the broad cup end of the antler. With his serrated knife and some sand fetched from the green-sand where it crops out below the chalk

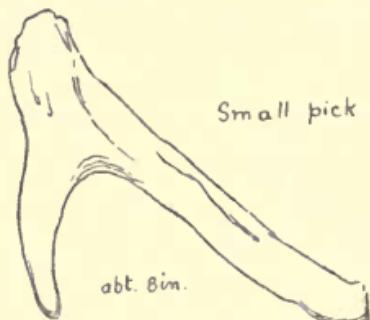
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3 in.
Hammer stone

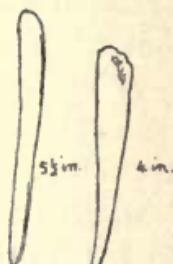


2 $\frac{1}{2}$ in.
Cup of chalk

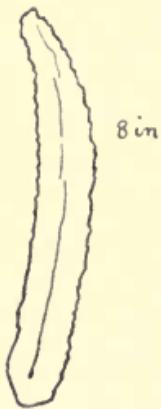


Small pick

abt. 8 in.



5 in. 4 in.
Bone chisels.



Flint knife
Grovehurst.



Flint borer

Grimes Graves.

New Stone Age. Flint factory.

he sets to work and at last saws through one tine. Another has to be removed; the stumps remain on the finished pick. His patience is exhausted—he

Flint-Workings

burns off the large cup end of the antler, and then it is ready for use. A smaller pick is made of one of the upper tines and part of the beam.

At Obourg a flint-miner has been found buried with his pick, which is quite similar to those found in England at Grimes' Graves and Cissbury. He was digging ahead of his companions when he came to a "pocket" of sand, which descended swiftly upon him and buried him at his work. His skull is of a somewhat square-headed type, and he was only 5 ft. 1 in. high. Another square-headed miner was buried with a child at Strepy. He had with him a single and double-handed pick and a lever, all of deer-horn. He was working in a trench ten feet deep, when the side of it gave way and overwhelmed him with his child, who had come to watch him. The square-headed men in England are considered to belong to the Bronze Age invaders, since they accompany implements of Bronze Age level of culture.

The Stone-men gradually learned to shape their implements with greater care. We have the slow development of the stone celt, which was inserted in a socketed handle and probably used as a hammer, axe, or adze, for these are the only uses which would tighten it in its socket instead of loosening it, the method of fixture being by inserting the narrower end in the hole and hammering it in fast, much as a broom-handle is fitted at the present day. One is shown in its socket, preserved in the boggy water of Ehenside tarn, Cumberland.¹ Its discovery decided the question of how the stone celts were fitted and used. Some also must have been

¹ See illustration at end of chapter on Lake Dwellings.

Child-Man in Britain

fitted the other way round for use as adzes for hewing out a canoe from above, or as hoes for digging up roots.

The later ones are carefully ground smooth all over. They were rubbed longitudinally on blocks of hard sandstone ; such grindstones have been found deeply scored with longitudinal grooves where the flint was rubbed.

Pierced hammer-heads were probably introduced or invented with the Bronze Age, and at this period stones other than flints are used for these implements ; one of grit and one of dolerite are shown. A depression was probably picked out with a hammer-stone and a flint point on either side of the hammer-head. Then a drill was requisitioned. In the first place a wooden drill was probably used, twirled between the hands and assisted by wet sand : the operation is one calculated to occupy all a man's spare time for a year or two, so slowly does the hole deepen. Later, a string drill was probably invented —it may have been one of wood tipped with flint. A string is wound about the middle, the loose ends being held in either hand and pulled alternately. This gives it a rapid movement in alternate directions. At the top was a little socket, and into it fitted a small pointed stick held between the teeth of the stone-worker and enabling him to steady his drill. He very likely weighted the drill by inserting it in a heavy stone ring much like a spindle-whorl. With water and sand and this implement, drilling a hole became a more possible but yet a very tedious operation. Half-bored axe-heads have been discovered—perhaps the maker died before he had

Flint-Workings

time to finish them. The hole bored half-way through, the hammer-head was turned over and the boring begun again on the opposite side. When it was completed a stout wooden handle may have been prepared for it, but some of the holes are so small that it is thought that the haft was made of very tough hide instead of wood. This would give great elasticity to the blow, but perhaps not much directness of aim. Still Child-man often had to adapt his abilities to the requirements of his implements, and may have learned to wield such an implement with much skill.

The pierced axe-head of dolerite has a larger hole of even diameter. Holes drilled with a solid drill are always narrower toward the middle. This must have been made with a hollow drill. Perhaps a hollow bone drill was used with sand, perhaps a bronze tube ; the latter being cast in a mould.

Some of the Bronze-Age celts are of a very fine workmanship and of very ornamental forms. It is thought that the more elaborate were made for State ceremonies and were borne by the chiefs, and were not used in ordinary work or warfare. (See illustration, Early Copper Workings, page 95.)

CHAPTER II

A COMMUNITY OF THE NEW-STONE AGE

THE outcrops of the chalk form characteristic country, districts of rounded hills and waterless valleys, for the chalk is greedy of water and gives out no springs except at its base. Where the altitude is not great the chalk is under cultivation, as in Essex, the lower part of the Yorkshire wolds, the lower parts of Salisbury Plain. Above three or four hundred feet they remain bare and wind-swept, covered only with age-old thyme-scented turf, dotted with thickets of hawthorn and the characteristic chalk shrubs, with stunted juniper or yew in some parts, with box at Box Hill. The old down turf is close and thick, cropped for centuries by roaming flocks of shepherded sheep. It has been undisturbed perhaps for two thousand years, and mantles gently the works of a long-forgotten age.

On the South Downs and on Salisbury Plain almost every uncultivated slope is ridged or terraced and heaped into clusters of tumuli. The imagination of past generations has attributed these to fairies or other capricious agencies ; the present age attributes them more rationally to the labours of Child-man.

Why did he select these bleak eminences for his workshop and his dwelling-place ? Like the animals he is so nearly related to, Child-man chose comfort, warmth and ease except when necessity or the

A Stone Age Community

excitement of the chase drove him to exposure and exertion. The tendency to live in fresher air, in more exposed situations, the liking for wilder scenery is quite modern. With wattle walls, unglazed windows and a curtain front-door, our elevated modern houses would be bitter dwellings in winter. The indoor fire would be a nuisance from its smoke (though wood-smoke is less unpleasant than coal-smoke), and a danger to the wattle or peat-covered roof above. To our man of the New-Stone Age the high downs, exposed to all the winds of heaven, could have had little positive attraction ; yet some positive repugnance to the valleys must have driven him to select them as his dwelling-place.

Around the lower slopes of many chalk hills one may find step-like formations, known in Wiltshire as the Shepherd's Steps.

Excavation shows that the bedding of the chalk has been disturbed ; the step is not the result of geological or unthinking animal agency, but some hand and tool have laboured to make the flat terrace with its sudden drop at the edge. They extend often for miles, always more marked on the gentler slopes. They must be regarded as some sort of fortification interfering with the ascent of an easy hillside. But against whose attack ?

Another more striking form has an intrenchment, protected on the lower side by a wall of earth. These are always at a considerable elevation around the shoulder of a down, and it is above and within these earthworks that traces of man's habitation are to be found. Occasionally a platform or "step" occurs with an earth-wall just above it, the

Child-Man in Britain

“step” evidently forming the outer part of the defence.

The Shepherd’s Step is obviously no protection against a stone-throwing or sling-using enemy. Messrs. Hubbard make it very clear that it must have been intended to repulse the wolf, which was the continual terror and devastation of the herds on which our Stone-Age man depended for his sustenance. The plains and river valleys were covered with thick wood in which the wolves ranged to and fro ; it is hardly imaginable how the lives and property of the little communities of men were menaced. As late as our Anglo-Saxon forefathers the Were-wolf, the horrid ghostly wolf—the impersonation of a people’s fear—comes stealing out of the wet wild woods. January is the Wolf-Monat or month of his boldness. How much more must it have overpowered the little handfuls of Child-people whom it drove without ceasing into the unclothed heights—the downs and the moors—weird and lonely but safe in the absence of beasts lurking in the shadows.

The wild cow and wild horse, both pasturing animals, of course dwelt on the open grass lands. The wild cattle on the chalk downs had their tracks down to the water at a safe open curve of the river. These tracks may be seen at the present day, and excavations will show that, however deep the pathway may have been worn by the countless instinct-following hoofs, yet the chalk below has not been disturbed, its bedding lines run continuously still. The side of a down near the road leading from Stockbridge to Salisbury is scored deeply with

A Stone Age Community

numbers of cattle-tracks leading down in a slanting direction towards the lower ground. The downs lack water ; it is to a drinking-place that the cattle-tracks lead, it is to quench their thirst that the wild cattle dared a possible encounter with their hereditary enemy, the wolf. These cattle-tracks are all destroyed by the plough before they reach the water-side, but their course can easily be conjectured.

The modern shepherd waters his sheep at his dew-pond on the height. On the dry down, almost rainless in summer, the experienced dew-pond man makes a large circular hole in the chalk, partly fills it in with dry brushwood and straw which will be in no danger of becoming wet from contact with the porous chalk on the high downs, then with puddled clay worked out by the pressure of bare feet he thickly covers all the brushwood and straw, and carries the clay well beyond it all round. Now he has a basin of clay resting upon a non-conducting layer of dry straw. After sunset the clay becomes rapidly chilled by contact with the cool air of a clear night, and taking up no warmth from the earth, it collects a heavy deposit of dew on its surface ; a pond full of dew may often be captured, serving in the daytime for the watering of more than one flock of sheep.

The lack of water on the downs has thrown doubt on the likelihood of their inhabitability by primitive man. Messrs. Hubbard have pointed out the presence of ancient dew-ponds in the neighbourhood of these embankments or within them, generally at a great height upon the downs, though there is one comparatively low-lying not far from Stonehenge ;

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but this was probably a well-protected neighbourhood. It is also probable that the water-line, the line of springs, was higher than at the present day.

On the heights of some of the downs are found earthworks enclosing fairly large areas. There are the Cissbury rings, a double embankment (Fig. 3), oval in shape, of a mile and a half circumference, enclosing a proportionately large area. Four miles away, and at a greater elevation, is Chanctonbury ring ; it stands on a projection of the South Downs and commands a view of Cissbury ring and an extended prospect of the plain of Sussex. Outside the two there runs a low embankment enclosing land in their proximity ; this low ring is at least three or four miles in diameter. The springs nearest to Cissbury rings are at Broadwater, a mile and a half away. Within the rings are groups of pits, and on the south-eastern slope of Chanctonbury ring are tumuli. Besides, there are dew-ponds, dry ones, near Cissbury camp, surrounded by wolf-platforms. Another, below, is still full of water, and down to it wind curious gullies. Near Chanctonbury ring is a dew-pond sixty feet in diameter, protected by earthworks ; a deep trench occurs in the slope of the hill, part of the earth thrown out forms the outside of the basin, and part is arranged in two parallel embankments, protecting it and rendering it invisible from below. This, with another dew-pond on the top of the ridge, served to supply Chanctonbury ring with water.

Here we have the site of an organized village. Chanctonbury ring at its great elevation overlooks the whole countryside and forms a striking land-

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mark ; it is naturally the most important place. Within it are numerous pits, five to seven feet deep, and ten feet is the smallest internal diameter. They are not unlike the sand-pits which children dig out on the seashore—a depression with a raised ring round it. Remains found in them of bones, flint implements, land-shells and charcoal show that they were once the dwellings of man. Coarse pottery is found just below the surface of the pits. Two long-headed skulls were found, indicating the New-Stone man. The bones of the wild ox (*bos primigenius*), stag, otter, wild boar, and reindeer occur ; the bones found are from slain animals. These creatures are all wild and indicate a community given to hunting. On the other hand, shoulder-blades of the long-fronted ox, the first to be kept tame in Britain, and of the common pig, were used in the pits in which flint was worked.

Many of the larger pits are found by Col. Lane Fox to be flint mines. The straight shaft opens out below into galleries, at the bottom of which a good layer of flints is found. A chalk cup or lamp, battered hammers and wedges, picks of antler and shovels of blade-bones, rough cores of flint, scrapers and used flakes, are found as in the flint workings at Grimes' Graves. The galleries of the flint mines indicate a thoughtful, systematic working, and the presence of the tame ox indicates a herd-keeping community. Some of the flint mines evidently belonged to men of the later New-Stone Age. Rude pottery and the bones of many wild animals indicate a primitive human occupant. It is probable that the rings were continuously inhabited

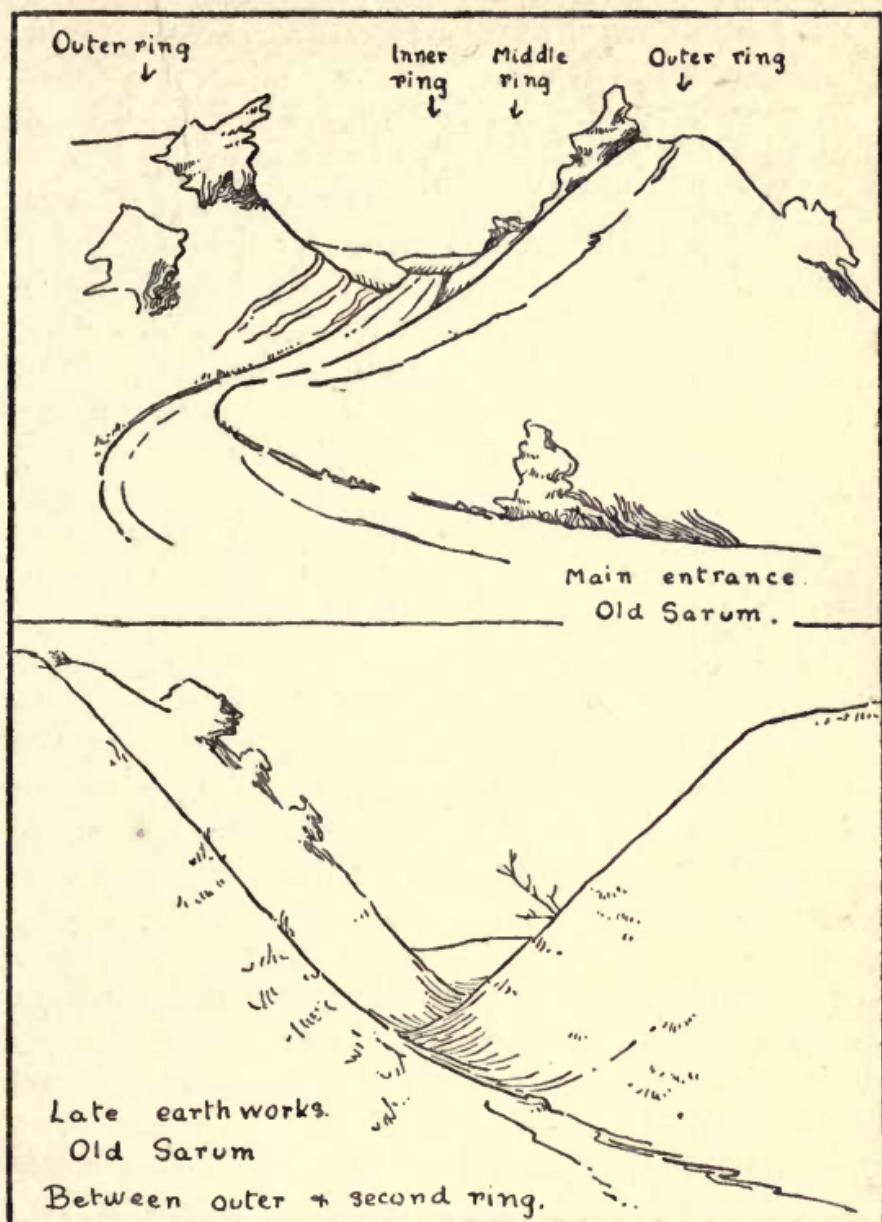
Child-Man in Britain

by earlier and later peoples, the fortifications, dew-ponds and flint workings being gradually improved upon, and not altogether a planned expedient of the later New-Stone men.

In the embankments wattle-work and portions of a wooden beam were found, indicating that some kind of fence-work made the enclosure safer. This would have been very necessary if the tame cattle were herded within them. The pits are all toward the north-western end. The herds may have occupied the other space. The smaller pits containing remains of charcoal and domestic rubbish must have been habitations. In the little embankment round them poles were probably driven—poles fetched with much labour from the wooded land below ; they were fastened together wigwam fashion at the top and interwoven with twigs, with turves laid upon them, or covered with skin curtains tied to pegs in the ground at the bottom. They were anyhow enclosed in such a manner that the rain, of which there was little, and the wind, of which there was much, were excluded. We may picture the family, herdsmen or flint-workers, squatting round a small fire of wood made between some stones, if it is damp and wintry ; and there is little fear of the hut burning over their heads. Perhaps they are making hot their boiling stones for stewing their meat. They are clothed in skin tunics neatly sewn together. One of the tame oxen has been killed, and they have their pot ready-filled with water from the dew-pond to cook their portion.

There is no dew-pond within the rings. Herded cattle would quickly trample through its clay bottom

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and destroy it. Near the eastern entrance there is a rectangular pit, perhaps marking the site of a guard-house. On the south-eastern slope are tumuli, if contemporary with the New-Stone men they must have been very late interments. They are placed so as to catch the first rays of the morning sun, a symbol of their worship. From the eastern entrance two curious gullies wind round to the dew-pond below. Messrs. Hubbard consider these to be cattle-ways, made in the first place by herdsmen and worn by myriads of hoofs, down which the New-Stone cattle passed on the way to their watering. Of the double way, one path was used for the descent and the other for the return, so that the ingoing and outcoming beasts should not encounter and interrupt each other. By the dew-pond are traces of a habitation. A guard would probably dwell there, and he could easily call assistance from above if there was danger of an attack. He would see that the coast was clear before the cattle left their pound. It was probably the duty of one of the guards to count the animals, using the guard-house as a telling-house.

The enclosed area between Cissbury and Chanctonbury rings was a safe pasture for the cattle in the summer. Part of it may have been used for the growth of fodder, and perhaps later may have been under cultivation. The Bronze men brought the sheep, and no remains of the sheep have been found in Cissbury ring.

The long-fronted cow or short-horn (*bos longifrons*) was the tame cattle of the New-Stone Age. It was wild in Britain: its bones have been found in the fens with the beaver, the wolf, and the red

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deer, and have been discovered in many widely scattered places. The New-Stone man must have tamed it. The first cow, the short-fronted cow (*bos primigenius*), was never tamed, although it did not become extinct in Britain until the Bronze Age. One skull has been found in Burwell Fen, near Cambridge, with a polished flint instrument cleaving it.

The tame cow of early Britain (*bos longifrons*) was small—not larger than a Kerry cow—it had small horns curved forward and inward, and its forehead was high above the level of the eyes, hence its name. So much may be discovered from its skeleton. Werner tells us more by comparison with living cattle resembling it in form. It was of slender, almost graceful, build. The coat was of a uniform yellowish-grey or brown tint, white patches being uncommon. A lighter streak surrounded the muzzle; it had a light iris round its large pupil, a black stripe ran down the back, and the colour of the belly and inner side of the legs was lighter than elsewhere. The skin, the muzzle, and the nostrils were dark. Lighter-coloured hairs lined the ear and long soft hairs adorned its rim. It was probably not unlike the modern Jersey breed.¹

In the spring, when the new grass has covered the down slopes with verdure, the New-Stone man leads out his diminished herds to pasture. During the wintry fodderless time one by one many have been slain. The calves are a few weeks old. The

¹ The so-called "wild" white park cattle are descendants of Italian stock introduced into Britain by the Romans. They have no relation with *bos primigenius* or *bos longifrons*.

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cows would not allow the herdsmen to come near them during their first weeks of babyhood, not having mastered their hereditary fear of man. There are only one or two bulls, but several cows, each with one or two calves of her own. They pass down the cattle-way to the dew-pond almost in single file; the guardsman at the bottom is standing outside his hut watching the landscape. The herdsmen, with sticks in their hands and stone axes at their belts, drive the herds gently down the hill. The cattle approach the pond and drink, they draw out of the water and pass on to the enclosed pasture, spreading out somewhat as they feed. The herdsmen and boys station themselves along the embankment and keep themselves in readiness for an attack. A calf strays away from its mother and frisks over the earth wall—to its ruin, for a wolf darts out of hiding and before the stupid little animal can see its position, he heads it off toward the plain. A man leaps up and flings his stone weapon after it, which catches the wolf's hind foot so that he limps but in anger springs upon the calf and kills it. His friends appear from the distance and devour the prey in sight of the angry herdsmen. The first man shouts to the others, and they call back again, drive together the herd, making the reluctant beasts return up the steep road. One of them hears the growl of the greedy wolf. The forsaken mother bellows mournfully. The herd take fright and stampede towards the upper ring, the cows butting the bulls to keep them from jostling their calves. Confusion reigns, the herdsmen call reassuringly, and at last the excited beasts stop galloping round

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their enclosure. The calves have poor milk that evening and one cow keeps the others awake all night, but a few thieves in the woods sleep on a full meal.

Chanctonbury ring was perhaps devoted to human habitation, the owners of the cattle residing there and looking down on the cattle-pound and the flint mines in Cissbury ring.

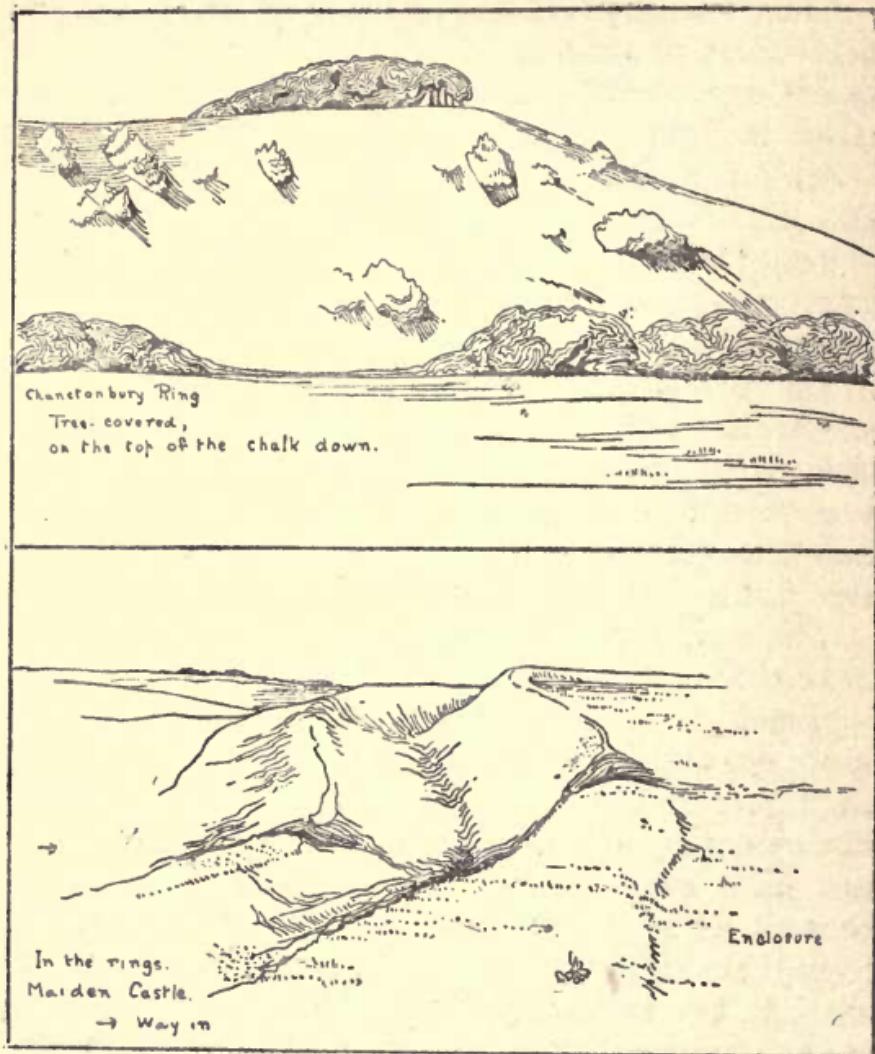
Maiden Castle is a very striking encampment, two miles from Dorchester. Its complicated series of rings forms a striking feature in the landscape, since it is situated at an elevation of 430 feet, and forty to fifty acres are enclosed within them. Some of the embankments have a flat terrace behind and within the crest, where men might walk and hide themselves against an attacking force. It is difficult even now to go in except by the regular entrances, and these were no doubt guarded during the habitation of the place.

The enclosure is divided into two by a low embankment, one half is higher than the other. It is suggested that the upper was used by men and the lower for cattle. There is a dew-pond still filled in the upper part, and some without on the side remote from running water. There are two cattle-ways : one leads down directly to an undulating grazing ground, while the other, the homeward route, winds round the hill, and enters by a tortuous course through the embankments, providing a gentle slope for the cows to travel and an entrance safe against invaders.

There is a raised roadway part of the way from Maiden Castle to Poundbury Camp, not far off ; it also winds in and out among the rings of Maiden

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Castle. The whole arrangement and earthworks of this fortified hamlet suggest a later period than the



New-Stone Age. Bones of animals, pottery, part of a quern, and a flat bone comb have been found in a refuse pit in Maiden Castle.

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The fortifications of St. Martinsell's Hill, which is a promontory of chalk near Marlborough, suggest a similar period. Wolf-platforms in tiers protect a gentle slope ; rows of embankments with pit-dwellings between, a cattle compound and cattle-ways, tally-house, dew-ponds, and a flint quarry have all been traced. Since flints were used long after the metals were introduced, it is not easy to gain any accurate idea of the date of a fortified dwelling. These are all remote from workable stone other than flints, and earthworks were used as a fortification as late as the eleventh century at Old Sarum. One iron object, perhaps the handle of a stoup, was found even in Cissbury ring, which is much more primitive in construction than Maiden Castle.

Along the edge of the South Downs are Seaford Camp, which is Roman ; Highdown, which is attributed to the Bronze Age ; Chanctonbury and Cissbury, which are attributed to a late Stone Age ; and Mount Coburn, which is late Bronze Age or Celtic, and was inhabited until Roman times, giving evidence of the tame sheep and horse and of good Celtic pottery, fragments of iron and Samian ware, the latter being definite evidence of Roman invasion.

CHAPTER III

EARLY LAKE-DWELLINGS

THREE are many later lake-dwellings or crannochs (= tree islands) in Britain, mostly in Scotland and Ireland, but in the Holderness district of Yorkshire some have been found which may be referred back to a very remote period; one, indeed, to the New-Stone Age. The Holderness district is an extensive stretch of country of monotonous flatness along the east coast, north of Spurn Head. It is composed of materials of the glacial drift overlying chalk, and the strata of the chalk tend to tip up and the drift to accumulate thicker toward the seashore. By an extensive system of draining the land has been rendered cultivable and fertile, but a large area remains yet under water and is known as Hornsea Mere. Several place names, *e.g.* Skipsea and others, indicate that there was once much water, and before the elaborate canals were cut much of the district must have been in the condition of the Norfolk Broads at the present day.

While cutting a small canal or drain at West Furze some timber was thrown out on the bank, and on excavation the remains of a pile dwelling were disclosed. Two platforms of different date were distinguished, the later resting upon the earlier. The upper contained no bone implements and the lower no pottery. The wood of the upper showed signs of being pointed with a metal axe, and the

Early Lake-Dwellings

lower had no indication of metal at all. The upper contained a skull of a Bronze-Age type and a Bronze spear-head with a hollow shaft, secured by a wooden peg to the end of a spear; the lower yielded a reindeer pick, flint chips, and pierced bone adze-heads. The upper platform has therefore been assigned to the Bronze Age and the lower to the New-Stone Age. The whole rested on a peaty bottom, which covered the original marly floor of the lake.

A handful of men, women and children have been driven out of their homes by their enemies, and wander through the dismal swampy woods of Holderness for a place of refuge. The children die of hunger and exhaustion, the numbers of the men and women are diminished by the wolves. The remaining few, weary and hunger-starved, come upon the edge of one of the shallow lakes. Perhaps water will afford them some safety as it does the wild-fowl. The stretch of water is broken by one or two islets of rushes, where the ducks and mere-hens are sheltering and where the gulls come to breed. They wade out to the islet on the black peaty lake-bottom, and, terrified as they are, they yet alarm the ducks, which take flight. On the moist island they take shelter as in a moated habitation and turn to examine the possibilities of the district. A heathy formation surrounds the lake; there are copses of birch, alder and willow, on the drier ground some thickets of hawthorn and coverts of hazel overtopped by oaks. The whole landscape is gloomy in its wintry colouring and dark with the shadows of the trees and the blackness of the soil and lake-bottom. The flat islet is very oozy and they pull a lot of rushes and

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lay over the top. With a little treading-on these become pressed into the mud. A duck flies home to his sleeping-place and is surprised to find it occupied. Quick as thought one of the men has at him with his pellet and sling, and he drops upon the water. A cormorant flies inshore and he is also killed, and the men fetch in their floating bodies for food. They skin them and eat them at once without thought of cooking. And how to get a fire with the water-soaked wood and dark rushes?

A woman says, "Build house here."

"Too wet," says another.

Taking it in turn to keep watch, they get some sleep, and enter on another day. Fresh hope is kindled in them and the wisest man with the biggest forehead has been thinking during his watch of the night.

"Put more wood and make dry," he says.

"Ah!" say the others.

Gesticulating, he explains his proposal. "Get bushes and make dry floor," he suggests; and having nothing better to say or to do, they spend the day cutting down brushwood and snapping the slender birch branches, laying them on the flat island under his direction. Presently it rises well above the water, and the others are quite satisfied with it, but not so he. They propose to erect their wigwams on it, but he shakes his head.

"Big branches make it strong," he says, and turns them all off to fetch bigger branches to lay upon the brushwood. He has them laid irregularly criss-cross, so as to raise the height and to keep them together.

Early Lake-Dwellings

“Pins,” he remarks, and sets them all to cut up oak branches into stakes with the stone axes. He helps the women and orders the men about. The stone axes make little short cuts, which are pulled open by a twist of the axe till the wood splits off—a rather slow and untidy method of working, but it is the best they can do with their stone implements. The leader has these stakes driven in at intervals, to prevent the logs from slipping one over the other; and toward the edges of his platform, which he has had made roughly square, he drives them in himself, slanting outward so as to buttress the whole.

The people have done enough work they think; they kill a bird or two and have supper, grumbling all the time at the stupid skeleton platform they have made. Their leader sits apart and thinks out what is to be done next. He doubts whether the men will work any more. The next day they decide to go off on a day’s hunt, being sick of bending backs and hewing wood.

“Tired of chop, chop,” they grumble, and go off. The women, three of them, are left.

“Never mind,” he says to himself, and sets to work with all his might cutting brushwood. When he has done a good bundle the women carry it over to the top of the logs. One of them shows the others how to arrange it round the edges of the square first, the thick stems pointing out, the branches to the middle.

“Right?” she cries.

“Right!” he replies, and does not further need to direct her. While he hews the wood the women cover all the platform with it, and help him as well.

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“ We have not eaten,” says the wisest woman to him at last.

“ Ah, I had forgotten ! ” he replies, and they await the homeward flight of the ducks under the paling sky. Only one sling is available, only one duck is killed, but it serves ; and they sleep, taking it in turn to watch, the women sparing this man till the last and giving him but a short watch because he has worked so hard.

With the next morning there is no return of the malcontents, and the remaining people resume their work. They hammer and stamp the twigs together and put broken twigs in all the holes.

“ Women’s work,” says the man. “ I go hunt.” They know he is thinking of the others.

“ You not come back ! ” they wail.

“ I come back. He send me,” says the man, pointing to the sun just peeping with a golden glance through the web of birch branches. He bows his head to the glowing one and sets off. The wisest woman undertakes the work.

She makes them strip bark off the trees and collect it in bundles. The bark she has laid upon the brushwood floor, and they beat it all down with logs of wood. They find stones—there are big pebbles in the drift—and with clay between them they make a hearth. They strew sand over the bark floor, and everything looks very neat and clean. Before sunset the man returns.

“ They gone, they lost,” he calls. He has found the axe of one of them and fragments of his leather shirt—the wolves have left nothing more. The women are somewhat moved, but not much, for

Early Lake-Dwellings

they have weathered such stormy times that the death of a man or two is no uncommon incident. The man that is left looks at their work.

“Good!” he says.

“I bring nothing.” He shows his empty hands. “Wait for ducks,” he laughs. And they all laugh—it is a thing they have scarcely done that winter. He holds out a branch of yellow hazel catkins.

“Spring! spring!” they cry, and bow toward the setting sun who is to resume his reign and give them warmth and food and happiness.

The huts are built upon the platform of poles, of wood and heather and clay. The fire is at last ignited upon the hearth. The man and the wise woman keep house together, and the plenty of spring brings enough grass for the rabbit, and deer, and deer for the wolf, and of both for man, so that his cruel enemy does not molest him.

The platform had two ways to land, being at an end of the lake; both these ways were protected by sharp stakes in two rows driven across the gangway, with a narrow opening in the middle.

There is an appalling waste of material, to the modern mind, in these haphazard ways of construction. Trees torn and stripped of their bark, and whole trees used where a careful selection of branches and sawing of the trunk would have made the material go so much further. But the trees are unlimited in number; it is no concern of a handful of men to preserve wood in a large forest. Their weapons and tools are so clumsy that only by hacking and splitting where they can are they able to construct anything at all. It has been contended that

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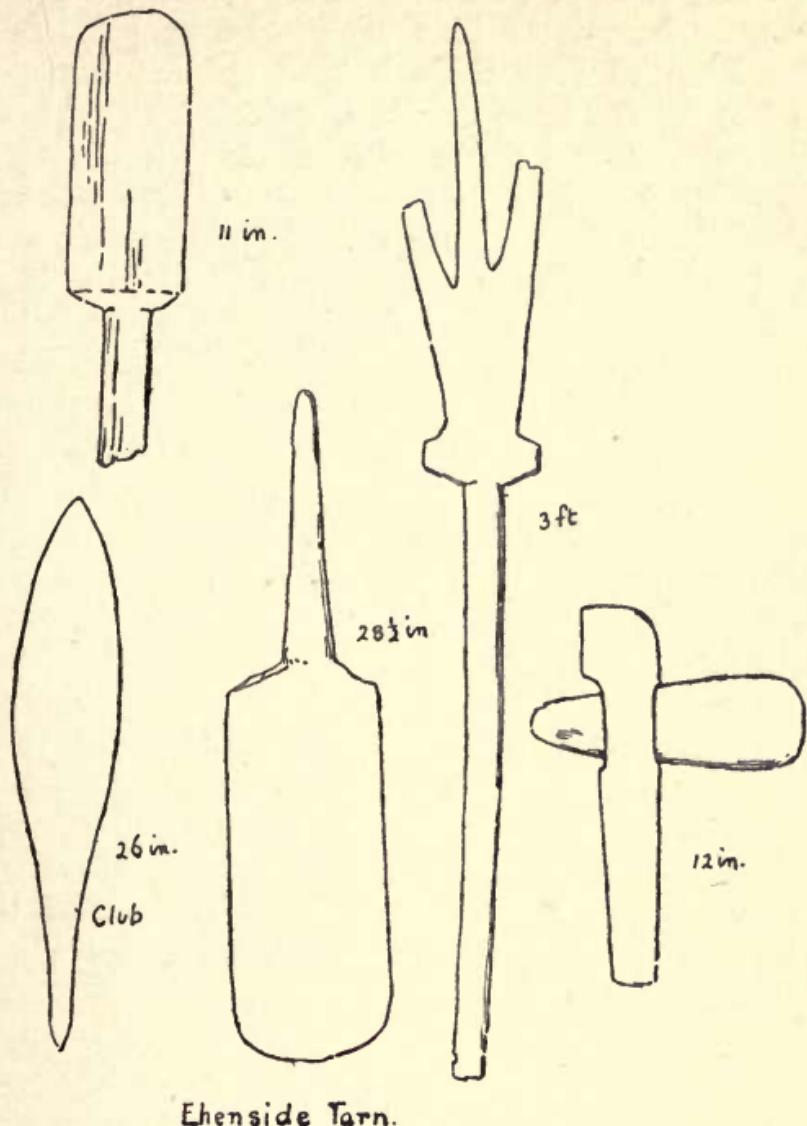
it is impossible to work wood with a stone implement at all, but a Danish archæologist by building a log hut himself without the use of metals has incontrovertibly established the opposite.

Whether these intrepid dwellers upon the water were subject to fevers and agues we do not know. They were prolific and the hardiest only survived, and were inured to damp, hunger, cold and a thousand things which would make a civilized man wonder if life were worth living at all. Stress of danger drove them to these unlikely habitations, necessity gave rise to ingenuity, and it looks as though the invention of a tree-island must have been sudden and quickly planned. Yet if people often inhabited such an area as the district of Holderness, they may have had to resort to this expediency in time of flood, raising their sunken platforms by the addition of fresh brushwood and piles.

It looks as though this particular platform at West Furze underwent subsidence, for the later floor is well above the first. Of course there is a considerable lapse of years between the one and the other, no one can say exactly how much.

In the later structure the piles were cleared of branches and were carefully pointed with bronze axes, and were then driven vertically into the lower platform, sometimes splitting the old rotten wood. The brushwood was arranged among the piles and on the top of them, the floor being made of bark as before. The new huts would doubtless be of rough basket-work, *i.e.* wattle, and daub. Poles would be erected, flexible twigs interwoven, the wall coated with clay to make it impervious to rain

Early Lake-Dwellings



and wind. The roof was very likely thatched with heather.

Child-Man in Britain

During both habitations flints were brought from the chalk cliffs of Flambro' or from the Wolds for the manufacture of flint tools—the people left a great heap of flint chips behind them. One pot was left by the later dwellers, quite plain, with an incurved rim and made without the wheel. They very probably had canoes made of tree trunks hollowed out by burning and chipping with bone adzes, which have been found, and the later dwellers no doubt made fishing nets to catch the food that lived in the water around them. They left behind also bones of reindeer (from the Stone-Age people), pig, small sheep, wild ox, and tame ox-horse, beaver, cormorant and wild duck. The Bronze-Age dwellers had two pet dogs, one large and wolf-like in appearance and one small like a terrier. Perhaps the first guarded the entrance to their dwelling and the latter was petted in the huts. A jet armlet is the only object found for personal adornment—that indicates that the people were never well off. It came no doubt from the Whitby jet mines, for there are many signs of prehistoric habitations on the bare uplands of the Cleveland moors. It very probably was brought down by the coast and not across the marshy, untrodden plains of Pickering and York.

CHAPTER IV

POTTERY

THE date of the first manufacture of pottery is very uncertain, but a few fragments of coarse half-baked earthenware have been found in connection with stone implements of the Early Stone Age. It seems likely therefore that the beginnings of pottery belong to the time of the rough flint workings and unpolished flint implements.

The first pottery was made in the manner of a swallow's nest, pieces of clay being daubed on to build up a cup-like form and hardened near the fire, which was built on a hearth of flints or flat stones where these were available. How was the fire obtained? In Celtic times a strike-a-light flint was struck on a piece of pyrites (sulphide of iron), the sulphur in the pyrites quickly ignited and inflamed any dry straw or grass that might be placed beneath it. In the New-Stone Age pyrites would hardly have been known, and it is difficult to imagine how, in a damp climate like that of Britain, fire could ever have been ignited. But on the chalk downs in summer it is often very dry and parched, and it is possible that by twirling a flint-tipped drill in a piece of soft dry wood its ignition was brought about. Fire once obtained was not allowed to go out, except by accident and misfortune. Part of the priest's duty was probably to cherish a fire for the use of the communities around.

Child-Man in Britain

We may imagine the people going down to the river-side to get clay, which seems also to have been used for the construction of dew-ponds in the New-Stone Age. They carry it back wrapped in rush-matting, or perhaps on trays of wattle—that is, of rough interwoven twigs, or in rough baskets.

The clay is sandy and sometimes intermixed with stones. They work it up by stamping it out with their bare feet, or perhaps at first with the hands alone. Probably the women and boys undertake the making of the pottery. They strew sand on some stones or hard ground and take clay in their hands, squeezing it out and patting it into flat portions ; they fit these one against the other, and contrive to build up a roughly-shaped bowl, plastering over the cracks and making the surface as smooth as possible. They set out the pots to dry in the sun and watch them to see that no rain falls.

It is not likely that the early pots were shaped in baskets. I have closely examined many and can see no trace of the imprint of wattle-work. One would expect it to be very clearly indicated. A mosaic of clays of slightly different colours and consistencies, patched together into one vessel, can easily be distinguished, and there are often suggestions of smoothing with the fingers. The earliest pots are not smooth enough to suggest that they have been much rubbed down after drying, like some of the Bronze-Age beakers, and considerable rubbing would have been necessary to remove the imprint of basket-work. Some have suggested that basket and pot were placed together in the fire. If this were the case, the impress would have been fixed and irremovable.

Pottery

The dry pots are placed on a hearth of flints, dry grass is fetched from the down and sticks from the woods and heaped over them. A little fire is brought out from the covered home hearth and the pile is ignited, baking the pottery within. In all probability one of the pots—of badly-tempered clay, perhaps not completely dry—explodes—ominous noise!—amid the wails of the workers and the smothered laughs of the children. When the soft wood ashes have subsided and are being scattered by the wind, the women eagerly push to the spot to see what is ruined and what remains. Fragments of one pot, but the others are intact and baked a pretty yellowish colour, but scarcely through, for the broken pieces are black in the middle of their thickness. Never mind, with care they will last a long time. If you have not seen Samian ware, New-Stone pots are good enough, even though, by reason of their rounded bottoms, they can hardly stand upright. Stand them in a hollow of the uneven floor and they will not spill. It is hardly likely that they were ever used over a fire, being too frail.

Later pots are made with greater care; the clay was probably worked into long rolls and the pot gradually built up from these. Two stew-pots are figured, they are round-bottomed and slightly blackened by fire. They have a slight shoulder and a curved-out rim. The groove thus formed probably held a cord and enabled them to be suspended over a fire, most likely on a gipsy tripod of sticks.

They are also decorated. The ornament in these cases is an impression made in the moist clay: in the upper figure, of a cord whipped round a fine

Child-Man in Britain

twig or pin, and in the lower figure crescent-shaped impressions of the thumb and little finger nail. The latter must be a very early form of ornament.

The beaker on the same page should be referred to the Bronze Age, for with these beakers occurs a new type of skull, a broad skull with a wide square jaw, whereas the skull of the New-Stone man was longer and more refined in form.

The Bronze-Age immigrants have been traced by their skulls and their beakers and manner of burial across Europe. They settled on the eastern coasts of England and travelled westward and northward, even to Scotland, carrying their new pottery and new metals with them.

The drinking-cups or beakers, three examples of which are given, were thin, high in proportion to their width, and of fine clay tempered with sand or powdered stone.

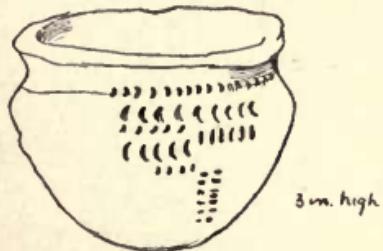
While the clay was wet they were ornamented with certain impressions in a large variety of designs, and when dry, they were rubbed down and made smooth with a flat bone implement or a bit of soft stone. They were baked on an open hearth and were seldom fired to redness. One or two red pots have been found, but they are mostly drab or yellow in colour.

The four examples shown are four variations of the type: one with a straight upper part and rounded lower part; one with the upper part slanting outward towards the top; the next with continuously curved sides, a rather degraded example; the last returning to a more graceful

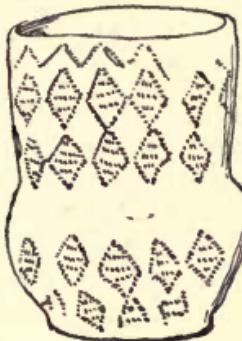
Pottery



Stew-pot.
5 in high
Thames at Mortlake.



Stew-pot. Thames
nr. Wallingford.
3 in. high



Drinking-cup. Peterborough
3.9 in high

New Stone Age Pottery

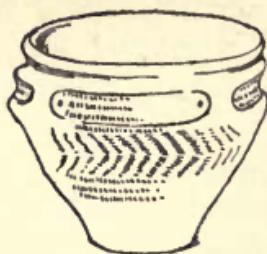
outline with high shoulders and a small out-turned rim.

Two small food-pots with handles are shown, very like our ordinary cup in outline. They must surely have been used for drinking, like the beakers, unless they were intended for liquid measures. One is

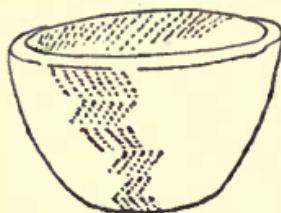
Child-Man in Britain



Beaker. Suffolk



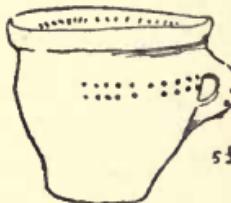
E. Riding.



Thames at Kew.



Food pot. Dorset.



Food-pot. E. Riding.

Food Vessels

Bronze Age.

ornamented with lines drawn by a fine point, the other with round dots. A plain food-pot like a basin is shown, and another which looks to be the descendant of the New-Stone stew-pots. It has attained a flat bottom, it retains the sunk groove

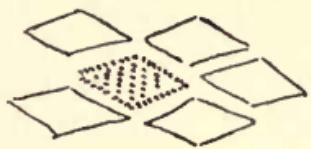
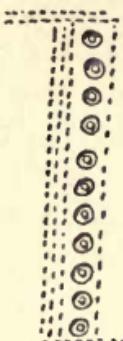
Pottery



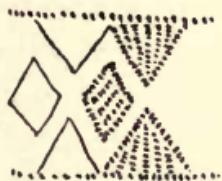
2

5 $\frac{1}{4}$ in. high

Drinking-cup
or beaker Wiltshire.



Patterns on Beakers



3



6 $\frac{3}{4}$ in. high.

Drinking-cup, Somerset.

Bronze Age.

below the rim, but has three raised intervals in the groove, each pierced with a small hole for the insertion of a bronze hook for suspending it over the fire. It is of graceful form, with a narrow base and

Child-Man in Britain

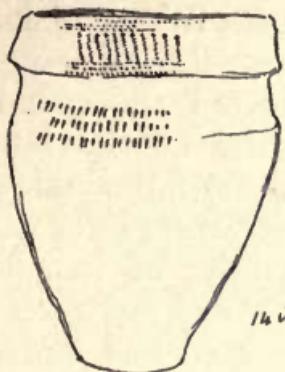
high shoulder, and is marked with the impression of the whipped cord.

The later New-Stone men burnt their dead on a funeral pyre and collected the bones into a funeral urn, sometimes of pottery that was too frail for household use. These urns were plain and sometimes with incurved rim, sometimes they had a groove round them which enabled a skin to be tied over (as in a present-day jam-pot) to protect the human remains within. It is a controversial question as to whether many of the pots, found dissociated from burials, are stew-pots or funeral urns. It is not unlikely that in so primitive an age the same pattern did duty for both.

The earlier Bronze men practised burial without burning ; later they seem to have come under the influence of the earlier inhabitants of the country and to have adopted cremation.

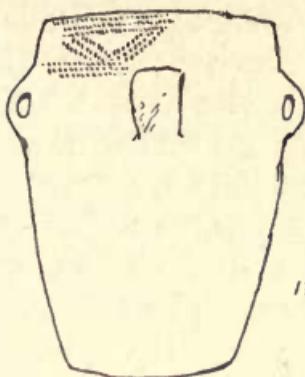
Two funeral urns are shown, from Dorset and Cornwall. They are tall, with rather narrow bottoms ; in one case a rim and a groove are present for tying on a cover, in the other four little loops are provided. The wide flattened rim of the former is decorated with a cord pattern, its shoulder is ornamented with impressions of the end of a small flat stick. The top of the Cornish urn is decorated with a simple and very effective cord impression. They are both quite beautiful in form, the little loops and the simple outline of the second being very pleasing. A curious little cup is that from Berkshire, pierced with large holes and ornamented with whipped cord and an impression of the end of a round stick with the pith removed.

Pottery



14 in.

Earliest type Dorset.



13 $\frac{1}{2}$ in.

Cornwall.



Berks.

This may have been used for carrying fire from the domestic hearth to the funeral pyre.

There are a number of simple units of decoration which, arranged in many different ways, make a great variety of ornament. No drawings are

Child-Man in Britain

attempted, there are no representations of plant form—the art is distinctly inferior to that of the Cave-men of La Madeleine, who lived presumably at a much remoter age. The patterns show distinctly the tool which originated them and are simple geometrical arrangements of the impress. Where lines are drawn, they either follow some line of the pot, as for example, horizontal lines parallel to the rim, or else are suggestive of weaving or plaiting. The thumb and finger nail make crescent-shaped impresses, sometimes a cord laid under the thumb-nail is used to make a short curved dotted line, which is repeated in various ways. A cord pressed round the pot gives a complete dotted line. A small stick may be used to make spots, a larger hollow stick will give round dots raised in the middle. A cord wound round a pin gives a short dotted line. This device was very frequently used. A triangular stamp of wood would give a triangular impression, and if used at the right intervals will give a zigzag line of false relief. The examples shown will give some idea of the application of these devices for decoration.

The pretty little mammillated pots of Wiltshire are rather late. They have rounded bosses applied to the surface of the pot, somewhat resembling the form of the human breast, but it is unlikely that they were intended to resemble any natural form. On none of the Bronze-Age pottery are the earliest attempts of this kind pictorial, and it does not seem to have occurred to the Bronze-Age inhabitants of Britain to apply pictorial art to their earthenware—that is to say, if they had any pictorial art at all.

Pottery

They could imitate a design or a form in the same material, they could erect a temple resembling a barrow in form, they could use anything that came to hand as a unit of ornament, but did not make pictures. It is not until Celtic times that we get a revival of pictorial art of the same order as that of La Madeleine.

After the Bronze men had had their day, we find another Celtic invasion of Britain by tribes which travelled from the south-east of Europe, leaving behind them records of their travels in their characteristic ornament, their iron weapons and their wheel-made pottery.

The wheels have perished, but they may have been round discs of wood with a peg fixed in the centre underneath, the peg resting in a socket. We may imagine a boy turning the wheel with his hand and a woman building up her pot of carefully worked clay mixed with sand ; or the woman might work alone, turning the wheel with her left hand while her right guides the shaping material. Very probably a wide-mouthed bowl is the shape she has decided to make. With a pointed stick she draws a beautiful sinuous Celtic design brought from distant countries by her artist grandmothers. With small pieces of clay she moulds part of the design into a low relief and then cuts the pretty object off the wheel with a piece of cord, setting it in the sun to dry for many days. She smooths down the dry ware with a bone smoother, and when it is ready, fills her built-up stone oven with her precious pots and dry wood. She sets fire to the wood, and her work slowly reaches its completion.

Child-Man in Britain

When the fire is extinguished and the oven cool, her neighbours crowd round to see how it has fared with her. The pots are red-burnt, a flaw here, a crack there is inevitable ; but some are of excellent workmanship and much envied until the Roman invasion brought with it the miraculously hard and durable red Samian ware.

In Celtic times much of the rougher pottery was still made without the wheel and of inferior clay, similarly many of the people of Bronze Age times had only reached the culture of the Stone Age. Not so many decades ago flint implements were in use for the ignition of a fire ; at the present time rough red ware is still used for flower-pots and for water-pitchers in Devon ; it is therefore not a simple matter to designate pottery to its proper period unless found in an interment accompanied by metal objects. The absence of iron or bronze, for example, does not necessarily indicate a Stone-Age interment unless the barrow is of a long shape and containing a partially cremated skeleton.

CHAPTER V

THE USE OF VEGETABLE FOODS AND CORN

THE cultivation of the land follows long after the keeping of cattle. It necessitates a settled home, it involves the sacrifice of bread, and months of patient waiting. Rabbits, mice, birds all wait ready to steal a share of the grain or young plants ; the weather may be treacherous and destroy the whole venture. The growing of crops was an enterprise requiring much labour, much foresight and patience—things which Child-man only possessed in a very small degree.

Wild berries, roots, nuts and seeds—the granaries of our little brothers of the fur and feather coats—were always gathered and eaten by early man. The pig-nut, the hazel, beech-nut, acorn, blackberry, wild strawberry and raspberry, the seeds of the violet and other innocuous fruits, are still sought and eaten by children where they occur at the present day. The nutting expedition has its origin far beyond the first glimmer of history. Like the squirrel and the country schoolboy, early man hoarded his nuts for the winter. Many of his coarse pots seem to have been made for the purpose. It is probable that many other roots were used for food, including the young underground stems of the bracken.

Our Child-men go down to the woods or heaths to get the bracken. It is a dangerous expedition

Child-Man in Britain

because of man's enemy : they go in a large company armed with their stone axes and hammers. They wind down the cattle-path, round the shoulder of the down, and then break away from it, leaping over the steeper slope. They carry also bags of hide and stone adzes in a wooden socket or twisted handle of hazel, until they reach the green-sand soil which lies beneath the chalk. Here the bracken flourishes. In among the bent stems and crumpled russet leaves of last summer's foliage they go, and work away like rabbits making a new burrow. The nuts are all eaten, but below the soil is a fresh vegetable food supply. Very deep the stems are buried, and the backs bend and the feet disappear into the pits before they have them out. In the intervals of work they keep up shouting and clamour in order to keep off the wolf ; but in spite of their haste they gather the strings of the bryony and the dead beech leaves to make necklaces and head-garlands. Before the sun has set they scurry up the down—devil take the hindmost—each one fearing the meeting teeth in his ankle. Breathless and relieved they enter the earthworks and are in safety.

The women wash the roots and bring out flat stones with a depression pecked in the middle by hammering with a sharp stone. They set to work to bruise the roots with a flint pebble held in the hand, or in a rude stone mortar with a long pestle, perhaps a naturally-formed long flint. As constructive power advanced in the New-Stone Age, both pestle and mortar—the former of flint, the latter of sandstone or grit—became much improved in form and were afterwards ground and polished.

Vegetable Foods and Corn

The cooking pots are brought out and filled with water from the dew-pond. Most of the cooking is done in the open, because in a wattle and daub hut fire is a very dangerous thing. The pots are only poorly baked, or of poorly worked clay, and there is much danger of their cracking. They must not be exposed to a naked flame, even of a wood fire. So flints are placed in the fire until they are red-hot, raked out with some handy flint implement, picked up between two cold flints and dropped hissing into the water. The little cub-children find this very exciting, they huddle round the pot until their mother gives them a push with her elbow and clears a space for herself. A few more red-hot stones raise the water to boiling-point. (It would not be difficult to find how many are required and of what weight.) The crushed roots are dropped in. The water gradually cools ; another hot stone is added, and after perhaps an hour of this slow cooling the vegetable stew is judged fit to eat. Perhaps some chunks of beef or of deer's flesh have been added, and a little salt—which is very difficult to come by. Out of the cooking pot they take what they require with their fingers, greedily or daintily as their inclination is, and pass round the liquor that is left for drinking each in turn.

There are many indigenous plants that may have been used for food from very early times ; for example, the leaves and bulbs of garlic and chives, the leaves of the wild cabbage, the root of the wild turnip, carrot, parsnip, of the wild beet and sea-beet. Watercress was very likely picked and eaten as it was found ; also the wood-sorrel and meadow-

Child-Man in Britain

sorrel. The underground stems of the bracken, pig-nut, of mint and peppermint, of which the leaves also would be eaten; berries of the blackberry, whortleberry, yew (the leaves of which are poisonous), juniper, wild cherry, crab-apple, wild pear, strawberry, sloe; nuts of the hazel, beech and oak. Many of these wild plants are now under cultivation, and by enriching the soil in which they grow and by selection their edible parts have been enlarged and improved beyond recognition. We do not require a pestle and mortar to deal with our modern carrots, turnips, or beets. The cultivation of them very probably had its independent origin in Britain. A householder would like to have edible plants near his house, especially the smaller roots which will bear winter storage. Nuts grew so freely without his effort that the trees were suffered to form and ripen in their own way.

Cultivated wheat was in all probability introduced into Britain with the Bronze-Age invaders, from the south-east of Europe, travelling along the lines of the cowkeepers, who had their origin in the same regions. An impress of wheat grains is found on a fragment of Bronze-Age pottery. But barley is a northern plant; it may be cultivated as far as 70° N., and may, unless natural evolution disregarded the obvious, have been independently grown in Britain. Many authorities are of opinion that wheat was the earliest corn in use in Britain; but not until after the Stone Age had passed away did its cultivation begin. The saving of seed corn and the patient foresight required in waiting for fruition are not characteristic of savage man. The

Vegetable Foods and Corn

growth of corn necessitated a richer soil than the high down-lands (where Stone Age man dwelt for safety) could afford. The corn was cut in the first place by a little hooked flint blade, fixed no doubt in a wooden handle bound with sinew. The blade was long enough to cut only a few ears at a time. No spade for digging is to be found, so we must presume it was made of wood, such a one perhaps as is figured in the Caedmon or the Harleian manuscripts, only without the iron shoe.

The Bronze Age man takes his wooden spade, probably made of a flat piece of wood, laboriously cut, with a projection on the right side only, for the right foot to press upon it. He digs over the surface of his little plot—it may be in spring, if he has not yet learned the advantage of an autumn digging and a frost-broken soil. When the dry winds of March are blowing, he sows his seed, after consultation with the priest, who is the man of science. It may be that his wife does all this work, or it may be that they work together, as do many peasants in their hand field-work at the present day; for example, in their potato-planting, potato-picking, or corn-harvesting.

The children are set to guard the plots from rabbits or birds, the plots being always within or near the safety of the hut enclosures. With July or August the ripening of the ears takes place. Before the finches have stripped them of their grain, all available men and women, youths and maidens, go out armed with their little sickles of flint or bronze to cut the corn. Bronze is too valuable to be in common use for field operations. With the left

Child-Man in Britain

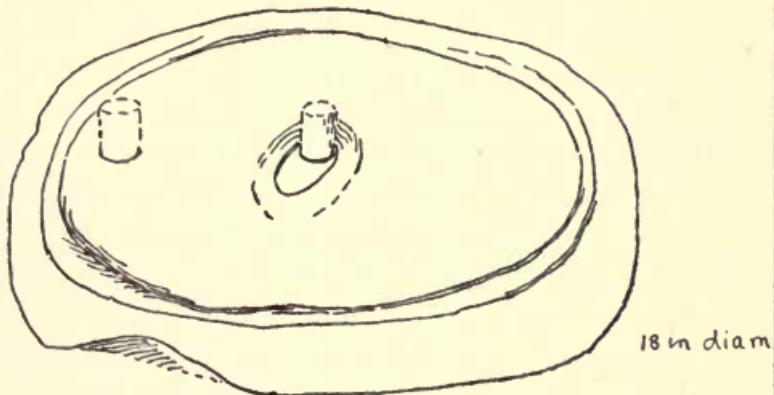
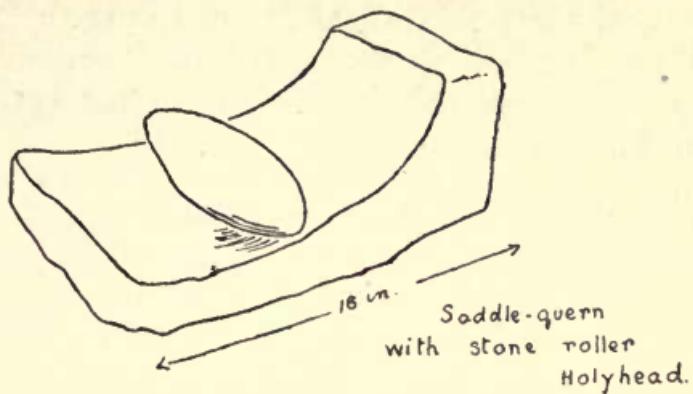
hand they grasp a bunch of corn stalks just below the ears ; with the right hand they hack through the stalks just below where they are grasped. The ears are stuffed into a bag. It is a long process, but it occurs only once a year and has all the excitement and novelty of a seasonal event. The long stubble may be pulled up for bedding for the cattle, or it may be wasted.

The ears are beaten with sticks upon a hard-stamped floor until the grains drop out. Perhaps a shovel is used to throw them up against the wind in order that the chaff may be carried away. At first no doubt they were gathered up in the hand. Next they are spread out to dry in the sun and after that reduced to meal.

You can make a meal by pounding the grains upon a gritty stone with a hard pebble. This was without doubt the earliest device. The gritty lower stone was later picked out into a hollow and sprinkled with grain, while another stone shaped like a rolling-pin was worked backward and forward with the hands upon it. Busy fingers gathered up the crushed grain—"rolled wheat"—and stored it in the stone pots for making into porridge.

Later still, a hand-mill or quern was evolved, or perhaps introduced, in which one stone rotated upon another. Both were made of grit or hard sand-stone, and sometimes of granite rich in quartz ; the lower one was convex, fitting into a concavity in the upper stone. One or two wooden handles were fixed in the upper stone, which was turned by two women, or sometimes a man and a woman. It was

Vegetable Foods and Corn



fed through a hole in the middle of the upper stone, and the meal escaped all round as it was ground.

A pot-quern was the most complicated form of hand-mill. A heavy stone basin had a smaller circular disc of stone fitting into it. Handles were

Child-Man in Britain

fixed in the upper stone, which was fed and rotated as in the last-mentioned quern, and the meal escaped through a hole in the side of the lower stone. This quern is evidently evolved from the earlier pestle and mortar.

CHAPTER VI

SKIN-DRESSING, SPINNING AND WEAVING

THE Old-Stone Age man lived entirely by the chase and by any wild roots or fruits that he might find. Deer-skins were his first clothing. Cave-dwellers of the New-Stone Age still used the same material, and lived largely by hunting. They killed the deer with their stone arrows and axes, and skinned the animal and cut it up on the spot, bringing back the more edible and useful portions with them. The skin was dressed for apparel and for use as bags, water-carriers, thongs and plaited ropes. The wet leg sinews were used to cement celts and arrow-heads into their wooden or bone sockets, for on drying they contracted and fixed the implements in their handles with great firmness. The leg sinews split, and softened with marrow, were used for sewing skins together. Bone needles and awls were made out of the splintered leg bones, which are very hard and tough. Bone "chisels," so called in error, for pressing and smoothing the leather seams were also made. Blade-bones made shovels. Deer horns were converted into picks, handles, or polishers. The marrow and brains were saved for dressing the leather.

Preparing the skins for use and keeping them in a flexible condition occupied much time and gave much labour. Tanning was not known at first, and

Child-Man in Britain

until it was discovered leather such as we know it was not made.

A woman spreads the raw hide on the ground. She finds a flint scraper, round in the handle, but with a sharp curved edge for working—an edge which has been somewhat smoothed by innumerable rubbings on the soft material. She kneels down and cleans the hide from the fat adhering to its inner surface. She next hangs it on a tree branch to dry in the sun. When she feels it again it is hard and unpleasant. She takes it down and carries it over her arm to another low tree branch in which is set, firmly grown into the wood, a half-moon-shaped piece of flint, the curved edge in its living socket and the straight edge well ground to sharpness and smoothed with much use.

“Ai!” she calls.

Her man emerges from the cave and comes to the tree; he takes hold of the skin at one side and she at the other. They pull it to and fro over the straight edge of the flint, stretching it and making it more supple. She picks it off the branch, holds it up and feels it. It is not supple enough. They work at it again.

“Good skin.”

The man nods.

She takes it up again, pulls it into shape, and they return to the flat floor in front of the cave. She gets out a rough little pot full of marrow, and rubs fat well into the skin to make it still more flexible and resistant to the wet.

The next operation is to cut out the shape that is required. If it is a garment she does it, but her

Skin-Dressing

man probably makes his own hunting-bag. He fetches a flint knife, places the skin on a flat stone, and with considerable effort cuts out two pieces straight across the top and rounded below. The woman finds a bone awl and a bone needle and some reindeer sinews, also a little bone plate pierced with small holes. The bone implements have all been made with her own hands. She smashed a bone, and choosing suitable splinters scraped them with a flint knife and smoothed them by rubbing on sand-stone and polished them on hard wood or slate. She drilled an eye in the needle by twirling a fine flint-tipped drill on the broad end; this she did by holding it upright between her hands and moving them to and fro one against the other.

She chooses suitable sinew threads, softens them with fat, and passes them through a hole in her bone disc to make them thin and even in working. Next she takes hold of the end of one in her left hand, lays it on her left thigh, and with her right hand passed to the left over her thigh she twists the sinew into a firm cord. She passes it on to her man, who threads his needle, and, piercing the two pieces of his skin bag at the edges with his bone awl, he carefully stitches them together while she twists a fresh thread upon her thigh.

The sewing slowly proceeds, every hole has to be pierced with the awl before the needle can be passed through. From side to side the thread goes, probably in a close running stitch. The use of two threads as by a modern hand-shoemaker in soleing a shoe was probably not known, though a bristle

Child-Man in Britain

might conceivably have often taken the place of a needle, as in his manner of working.

The oak and birch are both indigenous and close at hand, although it is probable that the Stone Age man found it difficult to get to them because of his fear of the grey four-footed bandits in the woods. At a later date, with bronze weapons, he became bolder, and it may be that at that period he laid hold on the new device of tanning.

In some accidental manner the first skin was tanned. They have a good hunt, the deer is killed and skinned, and they return. The grey wolf is very hungry, and seeing the men returning with their booty, watches for an unguarded moment. A man stops and carelessly swings his bronze axe at a felled tree that lies upon the ground. The wolf does not neglect his opportunity. The other men turn tail and run with the deer's flesh for their hungry families, but lose the skin in their hurry. The unfortunate flings his haunch of venison at the animal's waiting jaws and escapes with his bare life.

Some time later, returning for the felled oak, they find the skin soaking in a dark pool in the wood. The pool is brown and stagnant, the chips of wood and of oak bark have stained the water. They fish out the sodden hide and carry it away to their huts. The women come out and examine it curiously.

“Many days ago—wolf-fight—not rotten.”

“Nay, not rotten, but—”

They hold up the limp hide and shriek with laughter. Their men redden and go into the houses.

“Hang it on tree.”

Spinning

So they hang it up, and the children crowd round, glad to have a little laugh at their sires.

The dry hide proves to be stronger and tougher than any they have had. It is the men's turn to jeer. It makes good foot-covering and a wearless bag or two. The women want more of this magic wood-water, and it is brought. The oak chips and oak bark are brought along with it ; they are no doubt a part of the new "magic." Some priestly investigator will presently discover that any water, provided it has oak or birch bark in it, will do the trick.

The twisting of the sinews by rubbing with the hand upon the thigh is the direct antecedent to spinning. The cord so formed must have been extremely tough, like the larger cords of a 'cello. Finished cords were probably wound round a stick and secured in a notch to prevent their untwisting. At a later period the spool-stick becomes converted into the spindle. The beginning of the thread is twisted once or twice round, and then the spindle is rested on the knee and rotated by the thumb and finger of the left hand while the thumb and finger of the right twists the thread, which is thus wound and twisted at the same time.

The woman finds it advantageous to weight the lower end of her spindle, it makes it spin more evenly and increases the speed of rotation. She makes and bakes a clay ring, and makes a new spindle to fit it. The spindle is a smooth stick, twelve to fourteen inches long, with a notch at the top to secure the end of the finished thread. She makes it bulge a little below the middle, so that the clay ring or

Child-Man in Britain

“spindle-whorl” will not drop off. The lower end is pointed. If the clay ring is uneven her spindle will be inclined to wobble, so that she has to be very careful to make it of equal weight all round. She may now rest it upon a stone and twirl it more quickly with her left hand, feeding thread into it and twisting it with her right. Shorter fibres of plants or of wool may be used instead of the long sinew threads by this method. With accumulated skill she learns to twirl her spindle, allowing it to fall while the right hand feeds and twists the thread. Her combed fibre lies in a heap at her right hand, or is tied on to a distaff. As the spindle falls the thread is caught in the notch and the woman has only to pick it up, see that the thread is secure, and break off what remains. In this way she can fill innumerable spindles in a few hours, and she will need to have plenty of spindles and spindle whorls in her domestic stock. Such a method is still in use in some remote countries.

The spindle-whorls are frequently found with the interments of women, especially in the Celtic period. They pass through all gradations from rough to accurately rounded, polished and ornamented. They are of all kinds of softer material, the piercing of a hard stone with wooden or flint drills was not undertaken unless necessity compelled it. Baked clay, chalk and shale, bone, deer-horn, or amber are frequently used ; and spindle-whorls in the last three materials, which are both beautiful and lasting, are frequently ornamented with various circular designs, it would be easy and suitable to draw a circle on a rotated whorl. They may be two or three inches

Spinning

or slightly more across ; the lower surface is usually flat and the upper slightly conical.

Cathartic flax is common in England and probably indigenous. The word " flax " is Anglo-Saxon, and the fibre was very likely known to these invaders without contact with higher civilizations. The fibres of the bark of the birch, the stiff small-flowered flax stalks, the coarse and fine species of *Juncus*, the longer, tougher grasses, might all have been woven into mats, door hangings, and roofing material. But these fibres are too rigid to be spun, except after the manner of a rope, where one man loops the fibres over a stick and twists it round while another feeds the fibre into the growing end. It would seem that a high state of domestic culture is required for the complicated processes of soaking, rotting, pounding and combing of flax ; and if skins were plentiful no such device would have been independently discovered. The sheep appears to have been introduced into this country by the Bronze-Age invaders. The use of wool, comparatively simple in its preparation, and frequently adopted by our wise little brothers the birds, may easily have been found out by women of this country, unless the knowledge was brought here along with the sheep, and so taught to them.

The earliest spinning wheel belongs to a far later date. Its origin here, like the origin of most wooden implements, perishable in fire and damp, is lost. Its manufacture necessitated the use of bronze or iron tools. Its rotation is about a horizontal axis, while the rotation of the spindle is about a vertical. It was very likely a thick disc of wood,

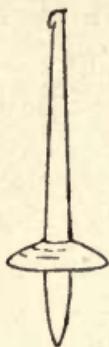
Child-Man in Britain

grooved at the edge, and rotating about a central pin like the axle of a wheel.

The left hand touched it at intervals to keep it turning, while the right fed and twisted the thread from a distaff of combed fibres. Passing tightly twice or thrice round the wheel to keep it from slipping, the thread as it passed off would be wound on a spool or reel by another worker, or else on a horizontally rotating apparatus to make a skein. Some primitive spinning wheels are made of strips of wood fastened to form two crosses, the ends of which are joined by wooden pegs and the centres of which turn on a single pin. A primitive "winder" used not so long ago by the North-Country cottar was of the same form, only rotating on a vertical axis. The drawings shown will give a clearer idea of these devices.

The plaiting of leather strips or of rushes very likely gave the first idea of weaving, which is after all only plaiting through a greater number of stationary threads. Plaiting with three threads leads to the use of four, five, or even more. Leather strips so plaited are even now always used for whips, and sometimes worn as belts because they are both strong and economical. Light mats made of wide plaits of the large *juncus* (sometimes called bulrush), sewn together by their edges, are still made in the marshy districts of Somerset; and the plaited straw hat is too common for need of reference. Leather, rushes, fibrous plants, and, later on, straw, must have composed many useful thongs and mats in the household of the later Stone men. Withies were also used for baskets; it is likely that the

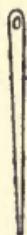
Weaving



Spindle 12 in.



Spindle whorl. 3 in.



Bone needle
4 in.

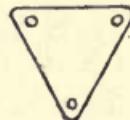
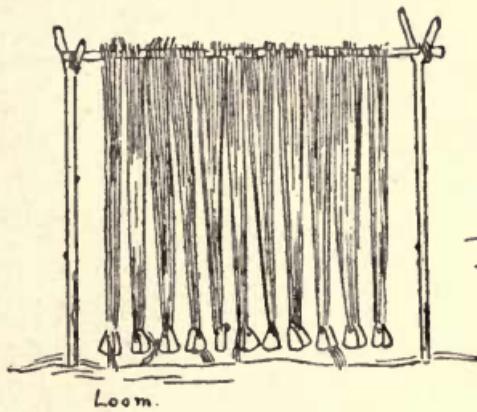


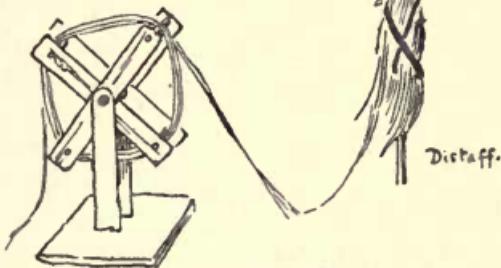
Plate of bone
with thread holes.



Loom.



Beginning of a 'Creel'



Cross-shaped spinning-wheel.

Child-Man in Britain

structure known as wattle, so often seen in cheap rough fencing, preceded basket-making. It was used in the construction of hut walls and of cattle enclosures. It consisted of the interweaving of rough twigs in and out between stakes set in the ground. An Irish creel used for carrying peats at the present day is made from the top downwards. The thick ends of the ribs are stuck into firm soil, the interweaving withies are worked round, the thinner ends of the withies are bent over and interlaced one with another and with the working wand. The round-bottomed basket is then freed from its attachment to the soil and the pointed ends are bent in and fastened off. This might very well represent a first transition from wattle to basket-work.

In all likelihood the first weaving imitated the manner of plaiting—that is to say, having the upper end fastened and the lower end free. They may have been tied in a bunch and hooked on a peg. Perhaps the loose threads were held by the left hand while the right did the interweaving. This method was capable of improvement. The stationary threads—that is, the “warp”—required to be separated. They were attached at intervals to a horizontal stick, supported by two forked sticks driven into the ground. They required to be held down so that both hands were free to manipulate the “weft” thread; they were accordingly tied in small bunches to weights at the lower end. This forms a primitive loom.

From her many spindles wound with threads by her own industrious fingers the woman unwinds the short lengths of yarn, and knots them to the hori-

Weaving

zontal beam of her loom. She brings out her clay weights and fastens the loose threads to them. Next she unwinds another spindle, ties the end of the yarn to her loom support, and begins to thread it through the stretched warp with her fingers. Her spun yarn is not so long that she needs a shuttle, although she might use her spindle stick, minus the whorl, for this purpose. Under and over her busy fingers drive the thread, now to the left, now, returning, to the right. She may make mistakes in the straightforward pattern ; she may be bothered by the teasings of her babies, like the woman in "The Cat that Walked" ; but with unbelievable patience she weaves, and combs up the weft with the deer-horn comb, and carries the work to its completion, untying the weights and knotting the lower ends, then untying the web from the beam and knotting the upper ends. The size of the cloth is limited by the length of her threads. The spinning wheel is necessary for the making and using of a continuous thread in the warp.

Some generations of skill in weaving will develop some ideas of textile patterns, twills (*i.e.* under two threads) and other variations of the straightforward under-one-and-over-one design. The patterns on much of the Bronze-Age pottery suggest an intimate acquaintance with the textile arts, so suggestive are they of the patterns made by interwoven threads. Dyeing of the threads will give colour and additional variety and pleasure to the work. Indigenous dye plants are known, though not very common : the dyer's rocket, the saffron crocus, the berries of the buckthorn, and the madder are examples ; woad

Child-Man in Britain

may have been cultivated, though it is not found wild in Britain at the present time. It was certainly imported in Celtic times.

The dyer's rocket gives a yellow or indigo green, the buckthorn a green, the saffron an orange, the madder a brown and the woad a blue dye. It may be that birch or oak bark soaked in water were used to give the rich brown sail-cloth colour. The dye from woad is obtained by stripping the leaves from the plant, soaking them in water, and fermenting the liquor. Cæsar, of course, describes the inhabitants of Britain as he found them staining their bodies with it in time of war.

As there is scarcely any preservation of textile materials in Britain, there is no evidence of the actual fabrics. An impress of burnt cloth in a Bronze-Age urn we have, complete clothing of a very complicated nature in a Belgian burial, and many fragments of cloth and netting from the Swiss lake-dwellings. These fabrics are coarse but very even. The Swiss lake-dwellers had the sheep and were able to use its wool.

Nets were used in very early times wherever there was much water and much fishing. They are found in connection with lake-dwellings. The cave-men used bone harpoons for fishing. They have been found in Kent's Cavern at Torquay—a cave not far from the sea—and of cleverer workmanship at La Madeleine in France. The net could easily be made by hanging threads from a line or rod to be stretched across the river, or by fastening them to a loom such as described above. The cross-threads would be knotted to each in turn. The nets from the Swiss

Weaving

lake-dwellings are of very even mesh, perhaps they were made by the modern fish-wife's method with the shuttle and wooden mesh measure, for they belong to a higher stage of simple culture. It is interesting to note that in Anglo-Saxon times the word "cnythan" implies simply to knot or tie; there are no equivalents to our netting and knitting.

CHAPTER VII

EARLY COPPER WORKING AND MINING

WHETHER the use of copper was independently discovered in Britain or not is unknown. Some authorities say that the Phœnicians would not have traded with the Tin Islands for tin if the natives had not known how to prepare the metal for the market, and copper is generally considered to have been used before tin. The Red Indians of North America had made use of their copper before they came into contact with Europeans, but they found native copper in large nodules and hammered it into shape—a very simple process.

We can scarcely judge of the wealth of the natural Cornish copper lodes, since they have been worked with such thoroughness for so many years as to be practically exhausted. Native copper—that is, the pure metal—does occur, and may have occurred quite abundantly; but the curious thing is that the primitive copper tools and weapons are cast and not wrought into shape.

Perhaps a Stone Age man in Cornwall lights his fire one day on a patch of bare blackish-red earth. He may be engaged in pointing some logs for his new hut by burning the ends in the fire. The fire dies down while he is digging out a hole in which to set the first pole. A girl comes to watch him at his work, for it is to be her hut and they are to live in it together.

Early Copper Working

“Queer earth,” she remarks.

Looking at the dying embers of his fire, the man sees beneath them, among the reddish burnt soil, little bright pinkish knobs and streaks. They are both rather alarmed, for being totally ignorant, they have no idea what this new thing may mean.

“Don’t touch it,” says the girl, wishing things to remain as they are.

But the man is raking it together with a stick, curiosity predominant.

“You daren’t touch it,” says she.

“I dare,” says he, and picks up the bits in his hand. They are rather hot, and bring the water to his eyes.

“Ah, ah!” she says, clutching at his wrist. “It hurts!”

But he shakes his head and leads the way to the witch-man or priest of the hamlet. The priest, if he is a false one, will pretend he knows about it, whether he does or not; if he is a true, he will seek to know about it by the means within his power. He handles it and admires the colour. He thinks, “This will be a fine ornament for a priest’s neck.” Then he looks on the two before him and says, “It is good.”

The faces of the two light up, glad of an omen for their new life that is so soon to begin.

With a hammer-stone the priest beats it into a wire, then into an unjoined ring—it is difficult to make a join—and hangs it round the girl’s neck with a new thread.

They take him to the place and the man shows him the fire and the earth. They make another

Child-Man in Britain

fire, and the same thing happens—always the little copper beads and streaks.

They scrape up the earth and put a heap of it on a stone for a hearth, and make yet another fire before the last one has died out. In a shallow hollow of the stone they find a round plate of the new shiny thing. The man gives it to the priest as an offering, and they worship the god who has sent them something so wonderful and new out of the skin of the earth and of the colour of the sun at setting. Rings, beads and bracelets are now theirs for the trouble of making them, brighter and better than the amber fetched from the eastern shores and vieing with the Irish gold.

The man gathers his red copper stone and reduces it by means of charcoal into lumps of the metal upon his hearth and exchanges it for whatever he needs—skins, meat, and wild honey, and he becomes very rich.

But one day a new idea enters his head. He is so wealthy in copper that he has a fancy to outshine his neighbours and make a fine new celt of this precious material. Not for use—oh dear no!—but for grand occasions when they meet together and feast and dance and sing.

Nothing could be easier. In his hearth-stone he picks a hole just the shape of his stone celt, and when he heats his red copper stone it runs into the shape just as it had run into the little round pits he had made before. With his new bright celt he is the envy of all his neighbours and the admiration of his woman. They make a brave appearance at the feast decked in armlets, beads and rings of the new resplendent substance.

Early Copper Working

The celt proves pretty useful too ; it is not hard enough, but it does not chip off like a stone, and it can be ground on a whetstone quite as well and much more quickly.

About the same time we may conjecture, for discoveries never come singly, another man discovers the hard and heavy tin-stone in the bed of a dry watercourse—stream-tin it has been called—and makes some lumps of tin, white and pretty but so very hard. An ingenious thinker says, “Copper too soft. Tin too hard. Mix them.” “Copper too brown, tin too white, gold yellow. Make more gold.” “But gold is soft.” The priest consults the omens and decides that they are favourable, and the experiment is made. The knobs of tin-stone and of ruby copper are mixed on the hearth where the mould of the celt is cut. A few brave people undertake the work, while the more timorous stand away in a small tip-toeing crowd. The fire of sticks is lit, burns up and dies away, and every one anxiously awaits the blowing of the ashes off the cooling hearth. Finding that there are no lightnings and thunders from heaven, the timid crowd presses forward to behold the new paler metal.

“It is not gold,” one cries in disgust.

“Then it is new,” another cries with fresh excitement.

Paler than copper it is, heavier than copper, but not white like tin. It has run all over the mould and about the hearth. It is still liquid. It is no shape at all. Every one is disappointed. But on cooling it proves harder than copper, and might make a good celt. What is to be done ?

Child-Man in Britain

“ Make a broth of it in a pot,” shouts one.

Every one jeers. But a pot is fetched, and it is heated in the pot, and they get a lump the shape of the pot.

The most anxious of the copper-workers says, “ You make noise. I can’t think.” And he goes way by himself for many days, thinking and working.

“ There is the red copper-stone and the tin-stone, and it makes something hard—hard enough for a celt.” Bronze we call it. “ But it runs about like water.” “ Put it in a pot.” He laughs. “ Yes, a clay pot.” “ You get a round lump.” “ I want a celt.”

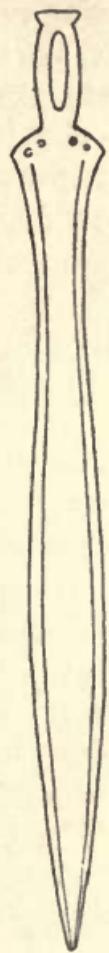
“ A shape of a celt.” He automatically wraps his celt in clay and unwraps it. “ That is like the celt mould in the hearth-stone,” he murmurs to himself. “ But the stuff runs like water.” “ Put it in a pot.” “ A pot like a celt.”

He leaps to his feet. “ It is only to make it,” he whispers.

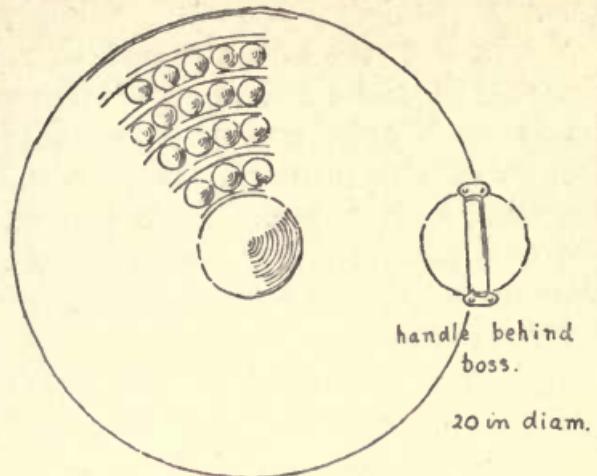
He runs to his hut and asks his woman for her best well-worked clay, and runs back to his hermitage. She sends the boy with some upon a board, and he lingers to watch his father.

He wraps the celt in clay, and it sticks. He greases the celt and wraps it in clay. When it gets harder he cuts it all round the sides to get the celt out, and when it is quite hard he fits it together again and ties it tightly, stopping up the cracks with wet clay. He makes two or three moulds like that, and then bakes them in the fire. They are none perfect, but it is his first experiment and he is anxious to get on with it. Next he builds his fire

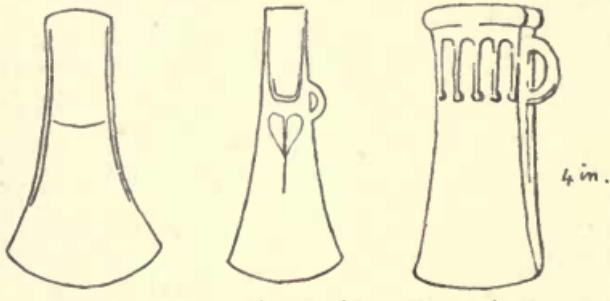
Early Copper Working



Bronze sword
Thames.



Bronze buckler, or shield with
central boss
Thames.



Three bronze celts.



3 $\frac{1}{2}$ in.
Socketed lance-head with loops.
Northumberland

over the tin-stone and black copper on a hollowed stone and waits till the metal cools. Then he heats it in a strong clay bowl. He has seen frail ones go to pieces in this fiery ordeal. His boy makes him-

Child-Man in Britain

self invisible in the shadow, watching with round eyes.

While it grows hot, the sweating, trembling man ties together the halves of his moulds, fills up the cracks with clay, and then rests the mould in a hollow of the ground. How will he lift the hot bowl ? With two stout sticks he raises it from the fire and tilts it till the glowing contents run into first one mould and then the next.

“ Alas ! ”

The second is only half filled. He drops the bowl in disappointment upon his bare feet.

“ Alas, alas ! ” he howls.

His boy with some judgment runs for his mother, and she, bringing soft thistle-down and clean grease of the wild pig, soothes his burn and comforts him.

“ Not ready yet ? ” she says.

He nods, and stretching out his hand touches the cooling mould. But it is not cool enough yet.

The boy slinks into the cave again unseen, and they all three wait. Presently the cord gives way in the heat and the two halves of the mould drop apart, showing a fair celt in the middle. The boy creeps forward and breathes a deep sigh of wonder. The man, now it is done, feels suddenly very weary.

“ Perhaps you will sleep and eat,” says the woman ; and the boy carries all the things to the hut while the woman brings her man back to his food and his bed of heather.

The red copper-stone and brown tin-stone are oxides of the metals. The former is a fairly common ore of copper, and the latter, in the stream-tin, which was deposited as a gravel by running water and was

Early Copper Working

once quite plentiful in Cornwall, is extremely free from admixture with any other substance. Smelting—that is to say, reducing by raising to a considerable heat with charcoal—is the only process necessary to set free the metal. Consequently it was these ores that were first accidentally discovered and used. It is strange that iron, which also occurs fairly plentifully as an oxide in the red iron ore or haematite, should not have been discovered as soon, or even before, the copper and tin. It may be that it was sometimes accidentally smelted, but its appearance was not sufficiently bright or attractive to call the attention of Child-man. In Egypt, indeed, it seems to have been known and used first; but there the ores of copper and tin are almost unknown.

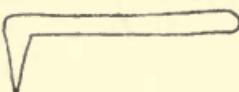
When the surface deposits of copper were used up, the men began to dig about the spot to find more. And in time they learned that the metal occurred in "lodes" or veins in the rock, and began to discover how these veins ran underground. In a prehistoric tin mine in Cornwall a deer-horn pick has been found with the skull of a miner who must somehow have perished. The same implement that served the Stone-Age flint miners is still in use, only it is now differently made. The beam of the antler is stripped of all its tines and has a hole pierced at one end; into this hole a sharp tine is inserted. It seems a long way round compared to the simple device of the Stone-Age flint-worker, but here the pick is at right angles to the handle, and in the natural horn this was not the case. Besides, as the point wore down, from the harder usage it received, it could be replaced by another in the same handle.

Child-Man in Britain

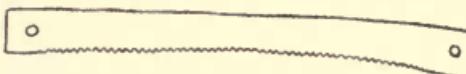
There is not much known of the early Cornish mines, but an investigation has been made of some copper mines in Spain at Aramo and Milagro.

In the first case the Bronze-Age miner was attracted by an outcrop containing native copper and rich nodules of the red copper ore containing 72 per cent. of metal. He followed the lode down until he could get at it conveniently no longer. Then he and his fellow-workmen sunk small vertical shafts to reach the lode again where it got deeper, and cut out a series of galleries working into the lodes in quite a systematic way, leaving pillars of rock to support the roof. To hew out the rock he used his stone celts and hammers and wedges of stone, and very laborious work it must have been. His galleries were no wider than was needful for the miners' passage to and fro ; very often the sides are polished with the rubbing of their shoulders as they went to and from their work. Deer-horn picks, some exactly like those of Grimes' Graves, have been found, used for loosening the mineral, and tines used as wedges for the same purpose when the ore was obstinate. A rake of two tines, with the beam as handle, was used for scraping away loose material. A hammer made of a burr of horn, pierced, and fitted on a handle of wood, was used for breaking up lumps, so that the ore might be picked out from the fragments of rock. The ore was brought up in wooden hods. These were carried by the miners, but they had a leather handle by which they were dragged along the ground where the galleries were very low or narrow. It was quite dark in the mines, and many ends of fire-sticks have been found. They

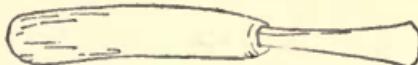
Early Copper Working



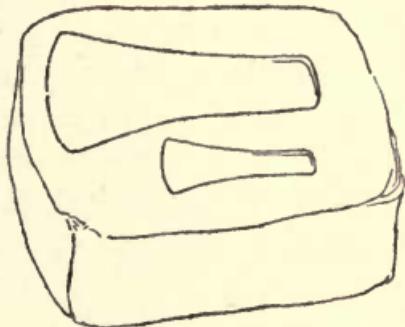
Bronze pick with wooden handle.
Salzburg.



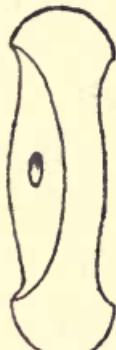
Bronze saw. Grimes Graves Weeting,
Norfolk.



Bronze chisel in deer-horn handle.



Mould for flat copper celts



6 in.

Curved axe-hammer.

Bronze Age.

were of resinous wood and were stuck against the rocky walls in lumps of clay, much as a candle might be used in any but a coal mine at the present day. In this mine there seems to have been no thought of

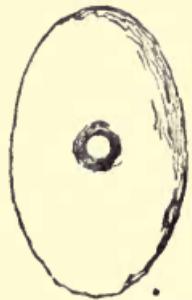
Child-Man in Britain



Flint celt, ground
Chatham dock-yard



Flint celt, polished.
Thames.



Pierced hammer-
head of compact
ochre grit.

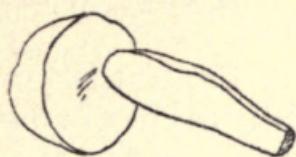


Pierced axe-head
dolerite. Caermarthen.

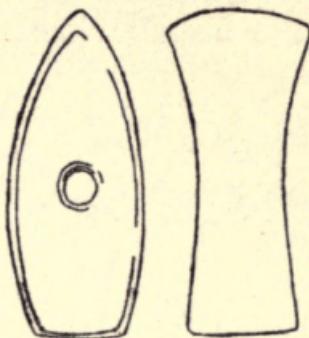


3½ in.

Early Copper Working

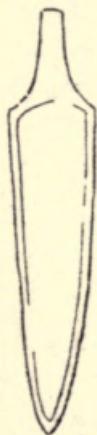


Flint (3 in.)
and pyrites. Yorks.



6 in.

Pierced stone hammer
Yorks.



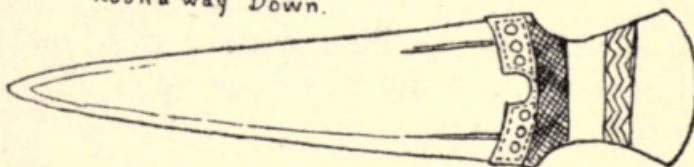
12 in.



3 3/4 in

Copper Celt. Ireland.

Copper blade with tang.
Roundway Down.



Copper knife
Early Bronze Age.

Child-Man in Britain

using the metal for making tools. Perhaps it was too valuable and was used only in small quantities for ornament, like a precious metal. The ore appears to have been exchanged and sent away in the raw state.

In the Milagro mine the ore was smelted on the spot and reduced to metallic copper, and was probably exchanged in the form of bars or ingots of copper. These have occasionally been found. A few copper or bronze axes of a very simple form have been discovered here, but the stone and horn implements were still commonly in use for working the ore. The prehistoric salt mines of Salzburg in the Tyrol are of a later date, but the deer-horn pick was still used and stone hammers and wedges. One metal pick was found, but it was shaped like a deer-horn tine in a hollow cylinder fitted on to the point of a wooden haft, which point was at right angles to its handle. The Salzburg mines reached a depth of 600 feet, and quantities of ends of resinous torches have been found crystallized into the salty floor.

When the copper ore was sent out in the raw state it had to be crushed and smelted by the people who purchased and used it. Hollowed stones of grit and pestles have been found in some Bronze-Age stone-dwellings in which the ore was crushed, and in the same huts stone hearths upon which it was burnt.

CHAPTER VIII

THE MAKING OF THE HOME

“The foxes have holes and the birds of the air have nests.”

IT behoved Child-man who had set out to be a little better than the beasts to seek out some shelter for himself, and later to make it a permanent habitation where he might bestow all his possessions and make a home for himself and his family. The tree and the natural cave are obvious refuges from many dangers, and the very first men in Britain, the Eagle-beak flint-workers, must have made use of them. Later men of the Old-Stone Age took possession of certain caves and have left us undeniable evidence of their life and handicrafts. Their homes were chambers in the rock discovered by chance, perhaps taken by stealth when a family of bears or lions vacated them, and barricaded against a return of the wild beasts.

These caverns occur most frequently in limestone districts where the percolating water enlarges the joints and crevices of the rock and forms passages often of great size, as for example in the limestone of the Peak, the carboniferous limestone of Yorkshire, the cliffs of Cheddar and the small but interesting mass near Torquay, where Kents' Cavern and the Brixham Cave occur. At Wookey Hole, Somerset, is another where recent discoveries have been made. These caverns show alternating habita-

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tion of men and beasts. In Kents' Cavern the Cave-lions gnawed the bones of their prey, the bears and hyenas reared their cubs, or crept in to die, and Child-man also took up his abode and left the ashes of his fire, the touch of his wood-smoke and the taint of his midden; for his observance of the laws of health appears to have been on an equality with the fox's and the wild cat's. Cracks in the cave floor yield bones and shells embedded in black residue, healthy enough now through the action of beneficent bacteria, but how undesirable in a dwelling after a few weeks of putrefaction.

The caverns are known to have been occupied by the earlier New-Stone men, and up to that time the groups of Child-people were small and scattered, incapable of concerted action and overawed by the dominion of the beasts of prey. The later New-Stone men passed upwards to the downs and learned to dwell in villages, to seek safety in desert places, and to unite in action and defence against a common foe, the wolf, after the larger beasts had become extinct. Many of the caves were then deserted, but certain ones, owing to their advantageous position and convenience of structure, were used long afterwards by succeeding generations.

Wookey Hole, Somerset, is such a cave-dwelling. It is situated at the foot of a cliff in dolomitic conglomerate and at the top of a sloping scarp, unassailable from above, and concealed from below, high above the river valley out of reach of floods. Fresh spring-water in abundance rises in or near the cave, there is no drip, and the roof is pierced by openings which communicate with the face of the

Making of the Home

cliff, and through which the smoke of a fire is completely carried off as by the up-draught of a chimney. Such ancient and modern conveniences could not fail to attract mankind, and the objects discovered show a long and late occupancy, until iron currency-bars were in common use ; while it was again used during the Roman occupation of Britain. In the floor-layer, which represents the Celtic period, little scissors, iron bucket-hoops and handles, ox-hoof plates, nails, shears, sickles, pots of various kinds, both for storage and cooking, some with simple but beautiful Celtic ornament, show a high state of culture, and the family that last dwelt in it must have had many interests and pursuits. They probably ploughed and sowed the land, kept cattle, harvested, smelted, and worked iron with hammer, anvil, and whetstone (there is a lode of red iron ore which shows signs of usage near by), made pottery with the wheel and carried on the arts of spinning and weaving and of milling corn with a quern. The cave was closed by some kind of palisade, for a latch-lifter was also found.

But the cave could only contain one family, and the household must have adopted the Miller of the Dee's attitude towards the rest of the world. To present-day views this may appear an unproductive existence, but the Wookey-Holites must have kept in close touch with traders and the outside traffic—or else they must have lived at a very late period, practising arts which were in their days old-fashioned, as they seem to have occupied a very old-fashioned though convenient dwelling.

The men who first were turned out of their caves

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neck and crop by their impatient parents with the old injunction to go out into the world and seek their fortunes, and who could come by no cave wherein to sleep, were driven to the necessity of devising another shelter. There were dwellers in Tierra del Fuego who lived in the hollow trunks of trees. Such a cramped shelter would afford a slight amount of comfort and safety at night to our Ishmael in Britain, but if that failed he was forced to build himself a hut against the cold of our northern winter-desert with his own hands and his own brain. Our birds take shelter in the thickets and interweave their nests of twigs, so *he* found a clump of hazels around a tree, and interweaving the branches, built himself a little night-shelter and threw down some dried fern for the bed which his cave life had led him to expect. With his skin cloak stretched over his shoulders, and his knees tucked up to his nose, he slept like a cat and left few corners for the wind to penetrate.

It is a step forward to cut the hazels and drive them into the ground, and to interweave twigs between these unnaturally growing trees. It is another step to clear a hole in the ground and bank up the soil around the bases of the poles, and then to tie the upper parts together and to put sods on the walls. Probably there was some onward rush of invention and then a quiet period wherein the new art was practised and assimilated, for one invention always brings another in its train. The Child-man has now a hut-dwelling—a pit-circle is all that is left of it at the present day. Some of these pit-circles are too small for habitation, only large

Making of the Home



Quarry-man's shelter
of poles, fern, & wattle-work
under a tree

enough for a body to curl up in at night—but so were some of the modern huts of the Australian aborigines, and to this use were they put.

Walking through a wood on the escarpment of the North Downs yesterday I found a gravel pit and beside it a workman's shelter built against the side of a large spruce. The thick boughs of the fir

Child-Man in Britain

gave considerable shelter from the rain, and the stumps of lower branches gave support for the middle of one of the side poles of the roof. The uprights were made of sweet chestnut—a chestnut tree was growing quite near. They were all forked at the end, and in two cases the forks were prevented from widening too much by being interlaced with a small pliant twig. One of the uprights had an extra prop. There were four poles forming the frame of the roof, three of ash and one of chestnut about 3 in. thick. Their ends rested in the forks of the uprights, and they were generally fastened together with rope-ends. Across this frame rested thinner branches roughly interlaced and criss-crossed, and upon these twigs and a thick cover of dry fern. On the side towards the wood-clearing there were three or four upright sticks driven into the ground, with hazel, spruce, and chestnut twigs thickly interwoven to provide a side-wall against the rain. The ground beneath the hut was quite dry, and in the shelter were stored dry sticks and a wheel-barrow, and there no doubt the quarryman ate his dinner on a rainy day.

Such a shelter made roughly out of materials close at hand we may suppose primitive man to have made at a very early period, and semi-civilized man to have made whenever it suited his convenience, and at the present day what joy it would give a few sturdy boys and girls to make just such a hut in their summer garden-plays.

The wooden huts for the chalk downs, where there were flints in abundance but no stable building stones, but what for the districts where even at the

Making of the Home

present day stone is plentiful and dry walls are still the rule ? There Child-man soon learned to make use of the convenient material, and his first houses were not pit-dwellings with timber walls, but circular walls of stone roofed with poles and turf. When it is considered how building stones are used over and over again in the construction of walls, it is small wonder that only a few of these hut-circles remain. From these old structures, weather-proof for centuries, the quick hands of man have made new buildings and so destroyed the traces of their fore-runners.

On the upland of Dartmoor in Devon, where loose granite boulders abound, are found many examples of man's constructive art in the shape of stone avenues, circles and cromlechs, which are described later, as well as hut-circles in clusters, or larger villages. The barrenness and intractability of the rocky soil has defied cultivation, and although much that was once moorland is now under the spade or even plough, there still remains a large tract given up to the wild things that dwelt there before man's time. Here also remain the buildings of savage man, who betook himself to these outlandish districts, like the deer and the moor ponies, in order to be free from the beasts of prey who, having nothing to fear, sought the comfort and riches of the river valleys and woods. Between the clusters of stone huts roadways can be traced threading through the bogs and the rocky places, paths by which the various families or clans could communicate with one another.

The largest village was that now called Grims-

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pound,¹ eight miles north-east of Princetown. It is conjectured that this was inhabited only in time of war, though the finding of spinning-wheels suggests a peaceful occupation, for the huts are surrounded by a double wall about 5 ft. high at present and from 9 to 14 ft. thick. It is probable that this great thickness represents the ruin of former erections on which other stones were placed when need arose, and very likely the wall was once much higher than it now is. Some of the granite blocks weigh several tons, and these were probably undisturbed, while others were placed between them to form the circular enclosure. The guarded ground is about four acres in extent, and the twenty-four huts find ample accommodation, with pasture for sheep and ponies.

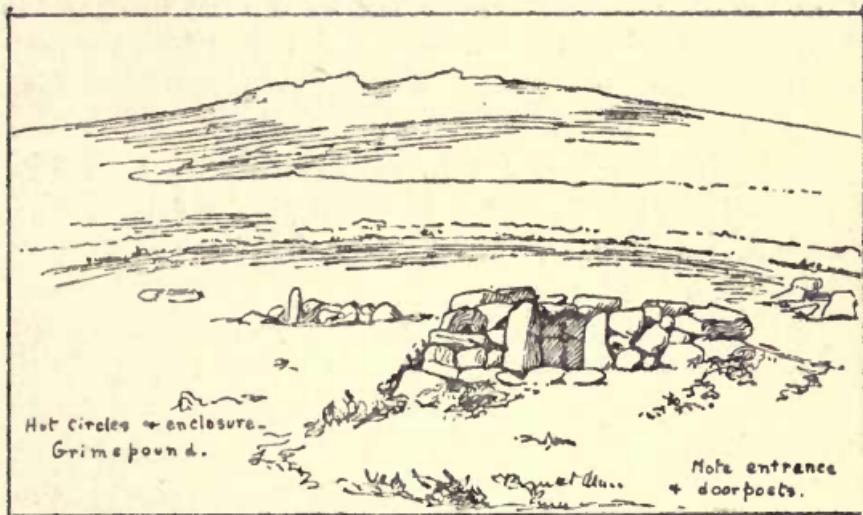
The huts are circular, two tall stones form the doorposts, and smaller, flatter slabs laid horizontally were used to make the walls which are two stones or more in thickness. The doorposts are at present about 4 ft. in height from the present soil level, and the wall no doubt corresponded, but rocks tend to become covered with soil, so they were originally some inches higher. The roofs were probably made of wooden poles, very likely meeting in a point at the top, like a stack of hop-poles, where they were firmly bound together and covered with turves or heather for a thatch. The men of those days were not much more than 5 ft. in height, and the diminutive houses may have caused them no inconvenience. It was no doubt considered usual to bend one's back

Grimes' Pound—*cf.* Grimes' Graves, Grimes' Ditches. Who is this Grimes—some giant of English folk-lore?

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on entering a doorway in order to avoid knocking one's head against the lintel, and these benighted clansmen had not dreamed of "the stately homes of England" to which our upright physique and indoor tastes have become accustomed. Certain it is that the Bronze man spent most of his time under the bare heavens.

Slabs of stone set in the ground served as hearths,



supplemented by two vertical stones against the wall, they made a simple fire-place excluding side draughts from the fire. An exit for smoke has not been noticed—but it was wood-smoke or peat-smoke, thin and fragrant. Stone benches 8 in. to a foot high served as seats in some of the huts, wooden logs may have been used in the others, if squatting on the ground was out of fashion. No metal has as yet been discovered in the dwellings, but spindle-wheels, cooking-stones, flint implements and pottery. The pottery resembles that

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found in Bronze-Age burials, and therefore the huts are ascribed to that period. The absence of metal might be a result of the poverty or the isolation of the inhabitants.

A village such as this was not built all at once or by the exertion of one man or even of several men acting independently. Like the neolithic earth-works, it represents concerted labour of rather an extensive kind; it is the work of a community or clan under the direction of its headmen, and probably reached its complete form by several steps. Some organizer would increase the fortifications and extend the enclosure when need arose, and the other villagers would bow to his judgment and work under his active leadership for the common convenience and safety.

In Anglesey, as on Dartmoor, many clusters of hut-circles have been found, but there is a large village of fifty or more at Ty Mawr on Holyhead Mountain. They are 15 to 20 ft. in internal diameter and the doorways always face to the south-east to get the morning sun, and still more to avoid the north-westerly gales. The village is situated on a south-easterly slope, so that these disastrous storms are prevented from expending their full force on the dry-built walls and probably somewhat leaky roofs. The hut-circles are built of the plentiful local material, easily fissile slate, which lies scattered in convenient blocks and slabs on the surface of the ground. Thick pieces of stone from the circular walls and slabs are used for hearths and fire-places against the walls. Single upright stones about 5 ft. high form the doorposts, but the walls have fallen

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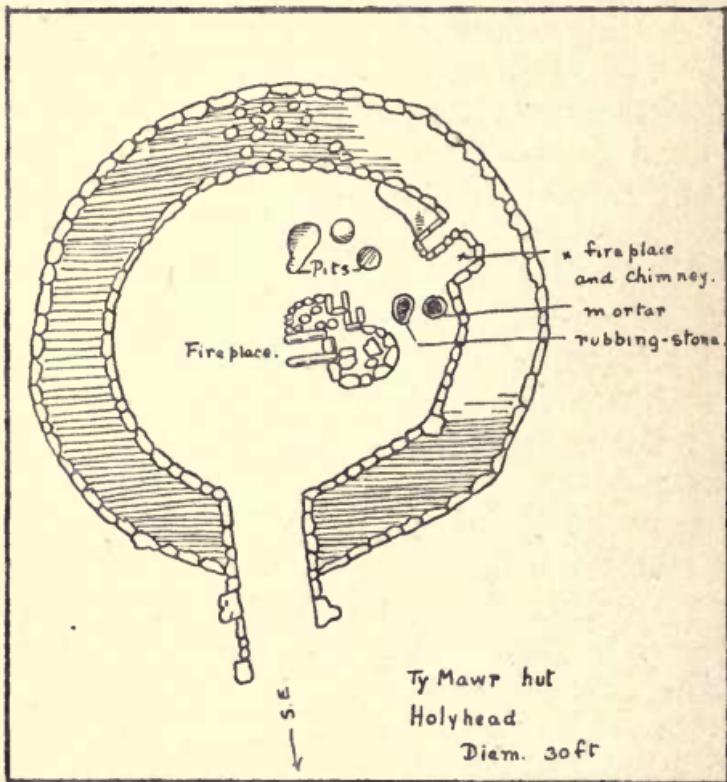
away from this altitude through the action of the weather. Slabs are stuck up in the floor dividing the small interior into compartments, perhaps each space afforded cramped sleeping room for the Bronze Age man, who despised, or did not expect, luxurious accommodation. Flat baking-stones and round boiling-stones taken from the beach were found. Gritstone saddle querns for grinding corn, and the refuse of shell-fish indicate that these huts were used as dwelling-places when their roofs of poles and turves still covered them.

Another larger kind of hut-circle occurs in the same village. A drawing of the ground-plan is shown, its external diameter is 30 ft., the walls are nearly 5 ft. thick and the entrance is about the same width turned to the south-east. The western side of the entrance is prolonged to shelter the opening more completely from south-western rains. The structure shows much forethought. In the centre there are platforms, perhaps made to give support to three fire-places which are composed of three upright slabs arranged against them. There is another larger fire-place in the wall, and this one has a chimney in the wall to give an up-draught and thus to cause a fiercer fire. The fire-places are lined with baked clay and are coated with slag—that is, stone which has been melted in the fire. In the floor a couple of pits are sunk, and in these sharpening stones were kept. Mortars and crushing stones of very hard trap rock show signs of having been used to crush metallic ores; crushed crystals of quartz similar to that lining a vein of copper in the rocks near by were found with them. Bronze

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implements and a mould for casting bronze spear-heads and celts were found under a stone in one of the dwelling-huts near by, and a mould for casting spear-heads and celts was also found in the island.

There is no doubt that in the Bronze period these



simple workshops glowed with the light of the fire and the brightness of the flowing slag and metal, that their walls echoed to the noise of pounded ores and the grinding of sharpened implements. The idea of a separate workshop was apparently quite conceived in the minds of the New-Stone men, who had their enclosed flint quarries on

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the chalk downs of this country, but this craft is of a higher order, involving more thought and the working out of an indirect process. The workers were probably clad in clothing of woven woollen material, a skirt, a belt, and sandals of hide. In the heat these garments would in all likelihood be discarded, but out of doors, in the colder air, a woollen shawl or cloak, fastened by one of the well-known penannular brooches of bronze, and perhaps a woollen cap would add to the dignity and comfort of the master workman, probably a headman, at least on important occasions. There must have been co-operation under a chief, and specialization in industry, but whether the workmen were in the condition of his children or his serfs, or whether they were free and paid in kind, it is hazardous to state—probably the former, the master-mind dominating his inferior blood relations and these content to work for the necessities of life unquestioningly.

The village of Ty Mawr workshops and dwelling-huts was enclosed like Grimsound by rough dry-built walls or defended by a precipitous descent against war-like attacks from without. In all probability, like our walled cities, it was permanently occupied, but prepared at any time to be converted into a fortress as the exigencies of frequent feuds might require. The very homes of the villagers were walled against attack, and the men went armed at all times with their bronze swords or spears and kept their shields bright for the battle.

In Ireland and parts of Scotland another later form of hut occurs which shows an advance in construction. It is found where slabs of stone are

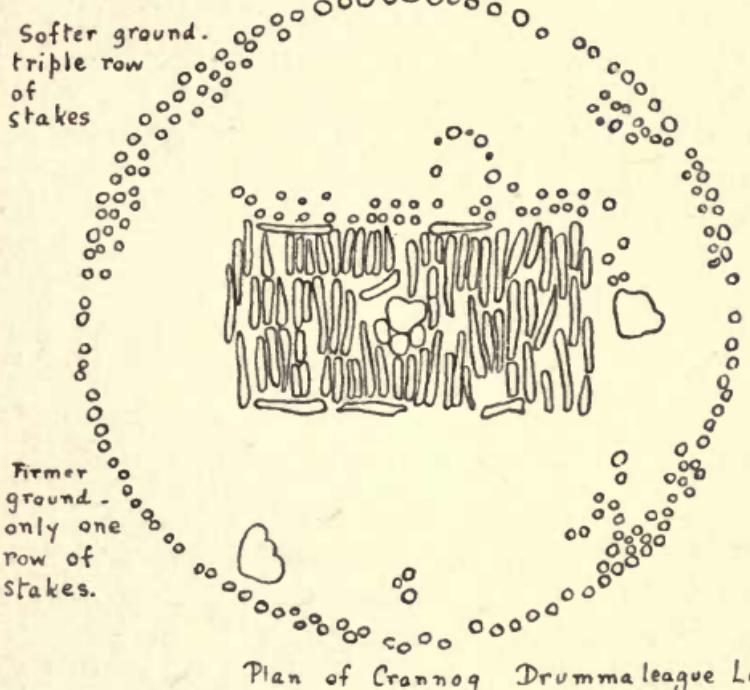
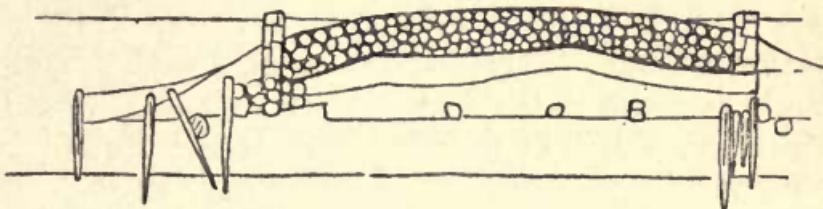
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plentiful, in areas of compact shales, bedded grits or schists. The stones selected for building are flat and are arranged horizontally, at first one above the other, but at a few feet above the ground they are laid a little nearer the centre of the hut, so that each stone projects inward over the one it rests upon by an inch or so. In this way the walls are gradually made to converge towards the middle of a dome-shaped roof, and the converging walls are thus made to support each other from a collapse inward, while stability in a downward direction is obtained by the flat shape of the stones, which only overlap each other by a small amount. From this manner of building to the later keyed arch or dome is a sudden step, but there could be no intermediate form. The shape of these buildings has given them the name of "beehive" huts, and they are of later date than the villages of Grimsound and of Ty Mawr.

The earlier "crannogs" or island-dwellings of the peat bogs of Ireland belong to the Bronze Age and are considerably later and considerably better planned than the rough lake-dwellings of Holderness. They appear to have been used as safe retreats in time of war by Bronze-Age chiefs and their families. Their structure shows considerable forethought and practice, and their construction must have entailed a good deal of co-ordinated labour under the direction of a chief. There is not much evidence of the gradual evolution of one structure out of another, the whole seems to have been more or less completed by one generation of workers. These water-forts were generally built on an island in boggy places where stones are un-

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Section of Crannog Roscommon.



common. The island is covered with one or two layers of round logs 4 to 6 ft. long. If the surface of the ground was very soft and boggy, several layers of logs were used, if it was firm, logs were put only

Child-Man in Britain

on the softer parts. Above the logs a floor of clay and gravel was laid down.

To keep the logs in position and to strengthen the sides of the island a ring of stakes with their upper ends inclined inward was driven into the yielding peat. They were sharpened with a bronze tool, and the outside ones were of oak 4 to 9 in. thick in a single or double row. If the ground was very yielding many rows of stakes were used.

Within this ring was another, the lower remains of tall stakes used as a fencing or palisade. They were made from straight young trees or from the straighter branches of large trees, the lower ends being driven into the ground. They must have been of a good height and their branches and twigs were interwoven horizontally through them to form a wattle fence, which served as a shelter from the wind, and, especially if strengthened with clay or earth, as a defence against the arrows which might find an airy passage to the island retreat.

Gangs of men clad in rough woollen or leather tunics labour at fortifying the weak places of a crannog. They are all interested in the work, for it is for the communal good and their safety depends upon it, but their boyish inclinations are not towards steady and sustained employment. A headman compels and encourages their activities. With huge celts a group are cutting and shaping logs in the borders of the forest on the dry land. Others bring them across the boggy soil on sleds perhaps, such as are used for carrying peats over soft ground at the present day. Over the water they are towed by rowers in canoes, for every crannog possesses at least

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one canoe. With stone hammers they drive the stakes into the quaking boggy soil shivering under the blows, while the headman overseer watches that the weak places are properly strengthened. Very likely, for they are all a little improvident and hasty, additional weaknesses will be afterwards discovered and repaired.

When the stakes are firm the horizontal logs are laid to form the floor, and then canoers seek stones and clay and gravel to make a firm and even layer over the logs. Next the tall palisade sticks are pointed and screwed into the ground by the hands; it is difficult to hit them from above, and the women help to interweave the wattle-work which is to protect their homes, using the looped twigs and branches that were left from the trimmed logs. The fence is then strengthened inside with clay and stones.

The erection of the huts follow. There must have been three on the crannog in Drummaleague Lough, for there are three fine hearths. Upright walls of short poles, not more than 4 ft. high when fixed are driven into the floor. Strong wattle work is interwoven between them by the men and women, who join forces over the construction of the home. The roof is made of poles arranged tent-wise, firmly fastened together with ropes of sinew at the top, and to the upper ends of the poles in the wattle walls. They go out together with curved knives to cut the heather, or with a broad celt to dig up peaty sods. They interweave transverse sticks of pliant green wood between the roof poles, and on these they creep up to fasten the thatch. A thong here and a

Child-Man in Britain

stone there help to render things secure, and the primitive hut with its brown colouring is picturesque among its moorland surroundings.

One or two querns have been found, and bones of the long-fronted domestic cattle and of hogs, so that corn was grown and eaten and cattle were bred to supply food, which was no doubt supplemented by the captures of the chase. Canoes have been discovered in the bogs, each hewn out of a large tree-trunk with the axe, and by the help of fire. Ridges across the bottom formed foot-rests for the rowers, but there is no trace left of rowlocks or of seats.

These island-dwellings persisted long after the Bronze period, and so secure were the inhabitants that they were a frequent source of danger to later more peaceable families dwelling on the mainland outside.

CHAPTER IX

THE CHILD-MAN COUNTS, MEASURES AND
WEIGHS. HE INVENTS, OR BORROWS, A COINAGE

HIS ideas of property become well established, and it is these that compel him to teach himself to count. There is no tender nurse to show the way, his own wishes are the motive. He finds a store of goodly pebbles, he hoards his nuts ; his greedy neighbour has his eye upon them, and when our Man is unwary he steals one or two, and the stock diminishes. This is most exasperating and impossible to check while our Man can only distinguish between many and few, but presently he begins to distinguish one-ness and two-ness and so on. Now he can count his beloved beads and lucky-stones, and can ascertain when Greedy over the way has taken even one, and can tell him so in his brief manner, threatening his hammer-stone as a punishment. His Woman makes it rather unpleasant when he does not bring home enough rabbits for all the dinners of the Cub-children—how they eat and how they multiply !—the poor Child-man becomes increasingly troubled by the size of his unaccountable family. Perhaps three rabbits are enough, and our Man soon remembers that one, two, three, are expected of him.

His memory becomes very good. Presently he knows all his tools and weapons, and she knows all her food-pots and how full they are of nuts, acorns,

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seeds or roots. They are hidden safely at the back of the cave or hut, the Cub-children feel her hard hand if they help themselves from the stores, and find it advisable to scuttle away and hide till she has forgotten. If they are left to keep watch, they will also have to count under the fear of parental rebuke if anything is missing—I am picturing early Neolithic man, the long-barrow man, the maker of rude pottery and good flint weapons, the flint miners of Grimes' Graves (Sussex) for example. His possessions have cost him and his Woman much labour. They are not to be thought of lightly, nor lightly to be parted with. If we try to crack large flints with a quartzite pebble to fashion the rudest celt, we shall realize how indefatigable was the patience of this rude worker, how valuable his implements. His implements last long when they are once made, and Greedy over the way, who is also lazy, has his bright eye upon the flint knives, the stag-horn picks and the food-stores of our Man and Woman. They have to count and remember everything : large pick and small, bone chisels, pet hammer-stones, the celt with handle of bent hazel, the cooking pots, the measure of food in the food-pots, and, when winter comes, the dole of food that the members of the family may receive to stave off famine until the Man can kill a hunger-bold stag or wild sheep saved from the wolves. They record numbers by means of notches on a stick or knots in a string.

The handful and the potful become recognized measures in the family. Big pot will hold two little potfuls up to the mark. Man has big potful

He Counts

for dinner and Boy has only little potful. The dominant family will, of course, make its measure the accepted one for the district, and so develop a standard liquid measure. We have now passed on to a later period when interchange of materials became a common thing—kind for kind—this man exchanges nuts for a rabbit, this woman exchanges milk for corn, or they give a stone implement for skins. They have begun to tame the cow, sheep and pig, and to grow a little grain perhaps ; it is the time of highly-finished flint tools, of early-decorated pottery.¹ Gradually the liquid measures for corn, nuts, seeds and so on become firmly established, each one in its own district. Even to the present day many curious fluid measures are in existence for varying materials and in different parts of the country. In a Science Year-Book are mentioned, for example, the pint of $4\frac{1}{2}$ gallons, the Anker (a Dutch measure) of 7 to 10 gallons, a tierce of 42 gallons—measures which are out of proportion with our regular fluid table.

I do not know if the milk of a cow has ever become recognized as a measure, but it seems very likely that there must have been pots of a size to hold a cow's milk as man contrived to tame and keep her.

The present names of some of our English measures of length point to a hoar antiquity. The foot is still in common use, let us hope not soon to be superseded by the decimeter. It is, of course, the length of a large man's foot ; we should each find our foot some measure near it, mine is $9\frac{1}{4}$ in., for example.

¹ This is of course conjectural.

Child-Man in Britain

The value of the foot is rigidly established now, but not in early times. The yard is probably the length of a good pace, and it seems likely that these measures were first adopted for planning out lengths on the ground, where the feet naturally rest—perhaps the dimensions of a hut or enclosure. In this case, one would imagine that these were not the earliest standards in use, because it is likely that many things were measured before land. Other simple measures still in use are the palm of 3 in., i.e. the width of a moderate palm; the hand of 4 in., i.e. the width of the palm at the thumb-joint; the fathom of 6 ft., being the reach of the extended arms, its Anglo-Saxon original meaning simply to stretch. In 1324 “three barley-corns round and dry shall make an inch,” but an Irish measure gives an inch as the width of a thumb, and a Roman measure merely as one-twelfth of a foot.

Long before he established any standards of length, our Child-man gains ideas of variation or similarity of length. He makes one celt the same length as another, or wider or narrower for a different purpose. He finds out that a longer handle will give him greater power to his axe, and perhaps decides that his hand is a useful way of comparing the lengths. He sees a very fine hammer but cannot possess himself of it. He handles it enviously and carefully observes all the parts. Four times can he grasp the handle along its length, and the celt in length is equal to the width of his eight fingers. Ah! he does not forget, and to-morrow sees him beginning a careful copy from memory. His Woman watches him; he explains how he can

He Measures

get the proportions correctly. She laughs. "Have I not measured my pots by the height of this stick, which is two grasps of my hand these many days ? I had it off the old witch-woman."

"I thought of it myself."

"And many days wasted—it is well a woman did not tell you."

Cloth, wire and metal bars all came to be measured carefully, but this must bring us down to the Iron Age. And it seems likely that later still came the measurement of land. Our Man judges the height of his hut poles by his own height, and measures one by another, like a child of to-day to whom a foot-rule is a superfluity. He marks out the size of his hut with stones and scratches of his digging tools, he judges with his eye the size of his enclosure. Until other property encroaches on his own he need not trouble, and therefore *does* not trouble to measure its dimensions. He relies on boundary stones. "Cursed be he that removeth his neighbour's landmark." But why, if he has measured the size of his land ? The fact is that until we began to survey and triangulate, we were not a bit certain how big our fields and enclosures might be. Start out with only your pace to measure even a small field, and you will find that it is a matter of excessive patience and judgment. The measurement of small enclosures, corn-plots, hut areas, may perhaps have taken place in kingless ages, but I should fancy it could not have preceded the buying and selling of land.

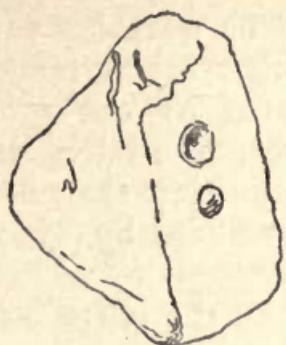
It is known that in pre-Roman times weights were

Child-Man in Britain

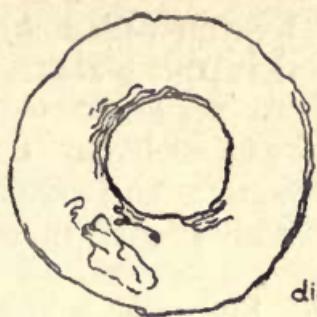
used to stretch down the warp threads in weaving, and to draw down the nets in fishing. They are generally made of a clay or soft stone easily pierced—examples are figured. Very likely these household weights were in use for doling out wool for spinning in Britain, as is described in their own country by the early Latin writers. Wool is too compressible to be accurately measured except by weight, and any clay or sandstone weight could detect a theft by the spinner ; its absolute value would matter nothing at all until it was used in the barter of materials, when a standard would have to be adopted. The weight standards are not and probably never have been so local and varied as those of length and capacity. Many articles of local produce are bartered by fluid measures : seeds, corn, roots, and so forth. Weighing is undoubtedly of later origin : it involves a balance and an advanced process of reasoning. The standard is then of far wider application ; perhaps it was introduced by civilized traders and only adopted by the early Britons when they were able to comprehend its working. The first balances must have been suspended from a beam hung at its central point, probably much like the quaint little silk-suspended apothecaries' balances in use not so long ago.

Gold is apparently the first substance to be carefully weighed. There is little doubt that traders first suggested its use as a medium of exchange. In pre-Roman times it was found in Britain ; there are traditions of its presence in Dartmoor in comparatively recent times ; there are tales of gold nuggets being picked up in English rivers, and it is

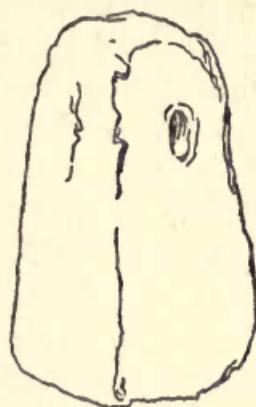
He Measures



Triangular clay.
weight - 2 holes.
Norfolk.



Porcerty ring - River Cam.



7" high.
Lakenheath,
Suffolk.

LATE CELTIC.

known that it was once mined in large quantities in the Wicklow Mountains. It is still found in Wales and Scotland, though not in sufficient quantity for working.

It is rarely that metals occur native and only if they

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do that they are early made use of by man. Zinc was unknown until comparatively modern times, its ores being called "blind" or worthless; it is likely that there are many other secret materials useful to man not yet revealed by our present means of analysis. Gold occurs native, silver occurs native, and copper also, and it is these metals that are always the first to be utilized by primitive man.

Our Child-man is attracted by the glitter of the gold and its rich colour, whilst its rarity causes him to be envied by his neighbours. He naturally values a big nugget more than a little one, and he will readily give a good many things to become possessed of it; for he finds that he can hammer it and draw it out and readily work it into rings or armlets for the adornment of his person.

Contact with Gaulish traders introduces our Briton to the fact that gold is made into little medals and exchanged for any kind of merchandise. He is loath to part with his pretty toys, but necessity or the coveting of a novelty compels him to do so, and he learns that to avoid being cheated, it is necessary to know how much gold he gives, how much it weighs. That mysterious little balance—does he invent it, or does he watch his better informed Gaulish merchant-man cautiously weighing, and after a time does he carefully imitate it for himself? Man must at some time have evolved it for himself. He probably first developed a good muscular sense of the "heft" of a substance—that is, of the resistance to his heaving. An excellent sense, one of the many physical accuracies we are losing by depending upon instru-

He Weighs

ments. There are old countrymen who can still tell you the weight of a sheep to a half-pound by looking at it, the weight of a heap of corn, the weight of a pumpkin by considering it in the hand.

The invention of the see-saw with the counter-balancing of one's self upon it, probably an accidental discovery, is the first step towards the balance. It does not take long to be assured that if the beam be balanced in the centre equal weights must be placed at the ends. Why not balance things instead of persons? Keep the middle in the correct position, and it is easy to see which bag of roots is the heavier, easy to alter the weights so that they are roughly equal. The beam may be balanced more accurately the narrower the point of support; the point of support may be fixed to the beam, which may then be rested on a narrow flat surface. This flat block may be suspended and then the beam can swing very freely upon it, with pans suspended at the ends. (For a rough balance it is sufficient to hang up the beam through a hole in its centre.)

It is likely that our Celt was not able to evolve a balance for himself because he was not left long enough without knowledge of it. The only weight standards to be traced are not of British origin.

In all countries seeds are early used as weight standards, the weight of a number being very constant, for individuals vary about a mean as the biometricalists have recently shown us.

In the days of King Alfred the pennies weighed each 32 grains of wheat, or 24 grains troy.

1265 (i) de Ponderibus. A penny was to be

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equal to 32 grains of wheat round and dry taken from the midst of the ear.

The same regulation is found in Edward I, and until Henry VII. (12 Henry VII).

“ That the bushel is to contain 8 gallons of wheat and every gallon 8 lbs. of wheat,
” , pound 12 oz. of troy weight,
” , ounce 20 sterlings (= pennyweight),
” , sterling to be the weight of thirty-two grains of wheat that grew in the midst of the ear of wheat according to the old laws of the land.”

Such an old-established standard may well have had its origin long before the time of King Alfred, and may even have preceded the Roman occupation and outlived it.

The 32 wheat grains which are equal to 24 grains troy are puzzling. Professor Ridgeway discovered that 32 wheat grains are equivalent in weight to 24 barley grains. Therefore the barley grain is equivalent to the grain troy, and it may be that the barley grain was the commoner grain in Britain, afterwards superseded by wheat. We find what looks like a barley ear on some of the inscribed British coins—but of course it may be bearded wheat.

It is very likely that the gold nuggets were first balanced against barley grains “ round and dry taken from the midst of the ear ”; the number of barley-corns required would be the weight troy of

He Weighs

the gold, only not so named, because “troy” is an abbreviation of the old French “d’octroi” (by authority).

In Ireland and other countries rings of twisted wire merely, or of a definite form, have been in use apparently both as a currency and for wearing. The Irish rings have been shown to be of weights which are roughly multiples of 15 grains. Many are of about 30 grains and many more of about 60 grains, while other multiples are also represented. These were either worn or exchanged, probably as the wearer could afford to keep them, or must part with them in order to acquire some necessary.

There is a story connected with the famous St. Brigit of Ireland preserved in an ancient manuscript which throws some light on this usage. The story is from the life of St. Finian of Clouard, County Meath.

“After that came Finian to Kildare to Brigit and he was engaged in teaching and preaching for a time. He takes leave afterwards of Brigit and Brigit gave a ring of gold to him. He was not covetous regarding the world, he accepted not the ring. ‘Though thou refusest,’ said Brigit, ‘thou wilt require it.’ Finian came after that to Fotharta Airbrech. On his way he met water. He washed his hands with the water and brought on his palm from out the water the ring that Brigit offered to him.

“After that came Caisin, son of Naeman, with great joy to visit Finian. And he offered himself to him and complained to him that the King of Fotharta was demanding gold from him for his liberation. ‘How much,’ said Finian, ‘asketh

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he ? ' ' He would accept an ounce of gold,' said Caisin. He (Finian) weighed after that the ring and there was found an ounce of gold in it. Caisin gave it for his liberation."

Our word " shilling " simply means " cut off," and it was very likely first applied to lengths of wire of the precious metals which were cut off and used for barter.

It is curious how the same names have been applied to measures, weights and coins in earlier days when convention was not well established and long periods of change have to be considered. It appears that in early Roman times a foot of copper rod, one-half a Roman inch in diameter and a Roman pound in weight, was cut into twelve parts, each part being called an uncia, which is equivalent either to " inch " or " ounce." So that the ounce is the weight of an inch of rod and the same word has to do duty for both, " uncia " being derived from " unus," and meaning simply a unit. The Roman pound was at one time equal to 5040 grains, but it varied at different periods, and one-twelfth of that is 420 grains. In another place it is stated that the ounce weighed 390 grains, which is equivalent to the weight of the small gold talent, which is three times the weight of the stater of which more will be said later. Between 390 and 420 grains there is a discrepancy of 30 grains, but this is nothing very extraordinary when dealing with primitive weights.

The Teutonic word " mark " was originally used for a measure of bronze or iron rods ; thus it easily became the name of a weight, and later, of a coin worth two-thirds of a pound.

He uses Coins

Exchange in kind is always the earliest form of exchange, and is not superseded until trading with distant places begins. Even then some particular commodity, for example skins, may take the place of a currency. In many southern islands and coast districts shells are used as a medium of exchange ; there is no evidence that such was the case in the northern countries. Property was scarcer and of more solid kind than the easily-won pig or gourd of our southern Child-men. Neither are our shells or seeds varied, beautiful, or enduring enough to be used for this purpose. The primitive inhabitants of our islands made beads at great trouble of wood or glass or jet : there were no scarlet seeds with enamel coats and few brightly coloured shells.

In Europe and Britain the tamed cattle, the short-horned ox and the sheep, were the most valued possessions of the Child-man. At what trouble he was to protect them from his enemy and their enemy the wolf we have already seen. It was the value of the cow or ox that became the principal unit value in Europe ; a gold weight of corresponding worth became established—it is known as a stater, and its weight was at an early time 133 grains. It became stamped with a device and converted into what we know as a coin.

The earliest British coinage was probably not of native origin. The earliest known coins are unmistakably from a foreign source. Our Briton traded across the channel with Gaul, and the exchange oversea rendered a medium necessary. His frail boats would render exchange in kind a dangerous as well as a cumbersome process. Cæsar tells us :

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“ Britain produces wheat and cattle and gold and silver and iron. These are exported from it, also hides and slaves and good hunting dogs.” But a coinage was in use in Britain long before this.

The token adopted was borrowed, as might be expected, from Gaul. Its history is very curious.

Philip II of Macedonia acquired the gold mines of Philippi and worked them extensively. He reigned 359–336 B.C. The output of gold was considerable, and his coins travelled over the whole of Western Europe. There was an earlier silver coinage at the Greek colony of Marsilia (Marseilles), but it was never so widely circulated. A large number of the staters of Philippos were carried off by Brennus when he plundered Macedon. The stater was originally of 133 grains weight. It was stamped on one side with a laurel-crowned head of Apollo and on the other with a two-horsed chariot and driver, underneath being the name of Philip (*see* drawing). The Gauls made fairly correct imitations of the coin, but reduced the weight to about 120 grains: perhaps gold was rarer and more valuable in Gaul. The imitations found their way into Britain, and by 200–150 B.C. we find coins were being struck on this side of the Channel of 118 grains weight or so, later ones decreasing until the latest weigh only 82 grains. This may represent a scarcity of gold in Britain or a desire to economize on the part of the issuer of the coins. It is usual for coins to be debased during times of poverty, but not often that they are restored in times of prosperity.

A die for similar coins has been discovered at Avenches in Switzerland. It is made of bronze with

He uses Coins

GOLD.



diam. $\frac{3}{4}$ "
wt. 133 grains

Stater of Philip of Macedon.



diam. 1"
wt. 119 grains



diam. $\frac{3}{4}$ "
wt. 91 grains

South Midland

TIN.



diam. $\frac{5}{8}$ "
wt. 19-25 grains,

Kentish district.

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a large proportion of tin, to render it hard, engraved and fixed in a cylindrical block of iron. The bronze is slightly concave to prevent the metal from slipping when struck. We may imagine our primitive artist with a bronze punch and graver, squatting down, having fixed his bronze disc in a block of wood, engraving his device with infinite clumsy trouble on the die. He is very intent upon his work and very satisfied with it. The stater of Philip is a fine coin, though not one of the best of the Greek examples, and it presents many difficulties to our early compatriot. It is too intricate, too minute, Apollo's head is too delicately moulded. He broadens out the features and represents the eye by a small dot. He considers the hair and wreath and decides to improve upon it. Apollo's curls become a series of half-moon ornaments, the wreath a series of rectangles and a large hook sustains it and takes the place of the ear. The bare neck does not please our barbarian, he covers it with a striped gorget. We have not yet arisen from his pagan indulgence, we have not yet realized the beauty of simple and right clothing, though our coins be meagre in ornament. This primitive artist contemplates his work with satisfaction ; his punch and his graver have controlled his efforts, we see them on the coin, isolated punch-marks, instead of the unity of the Macedonian workman's design.

Our Celt turns the coin over. Here are two horses, a two-wheeled chariot and a man, all on one little disc. I doubt if he fully understands it. Anyhow there are four front legs and four back legs—it's as bad as drawing five fingers to a hand. He

He uses Coins

draws out the horse's body into a greyhound form, gracefully sinuous. The legs present an impossible complexity : he joins them up in pairs with knobs at the joints. An additional line down the horse's nose and beneath his belly suggest the companion horse. Underneath he puts a punch-mark with seven more round it : that makes a rosette and fills up a space—perhaps it takes the place of a wheel. Above he labours at a winged figure. It will not work. With a number of punch-marks he covers up the spaces and joins one or two crosswise with his graver. It's not much like the original, but 'twill have to do, and he stretches himself and looks at the more pleasing side. The inscription does not trouble him at all.

Next he fits the dies, one into an iron cylindrical block, the other on the end of a short iron rod of the same diameter as the die. He weighs out some gold, heats it in a little pot, makes it into a pellet and places the pellet on the bronze die set in the iron block. He rests the other die upon the pellet and strikes one sharp blow with his stone hammer, not too heavy, and with the rebound a new gold coin is revealed bright and clean. Aha ! something worth having—equal in value to an ox !

A later artist makes only one horse with a very spirited little bird above it—something that he understands and can draw. Another troubles no longer with the wearisome features of the head and gives only a varied spot pattern developed from the head-dress ; where the horse was he places only a sinuous form and numerous large punch-holes.

Next, the British chiefs institute coinages of their

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own and cause their names to be inscribed upon them. Many of these chiefs are entirely without history or legend. Conjecture has connected some with Roman officials, but with no foundation. Cunobelinus seems to have been a very powerful prince, his coins are frequent and widespread. He is the Cymbeline of Shakespeare, the Kimble of Kimble Castle on the Chiltern Hills. His reign probably began before the birth of Christ and must have been of long duration. Geoffrey of Monmouth gives us the traditional story of his life.

By the time of the inscribed coins, the artists have forgotten all about the stater of Philip. On the front is represented sometimes a bearded head, frequently an ear of barley (or bearded wheat), or a small vine leaf. Some say that this vine leaf is of an independent foreign origin, but the ear of corn is native and may indicate that much corn was cultivated just before the Roman invasion and the gold was obtained in exchange for it. A horse, a boar, or an ox may be depicted on the reverse side; sometimes a small cross occurs, sometimes there is no ornament at all. The Celtic artist is set free to develop his design in his own way, and while the decoration is much simpler, it is rational, suitable, and never grotesque. It seems a pity that he was so long hampered by an imitation of a design so far remote from his ideas or achievement and in no way native to him.

Silver is often found in an uncombined state, copper occasionally so, in Cornwall for example, but more frequently in combination. Silver is also found combined with sulphur. Curiously

He uses Coins

enough, copper was imported into Britain in Cæsar's time ; probably silver was not worked until after Cæsar's invasions, although later it was exported from this country. A silver coinage is always much later than the gold, in Britain probably just before the invasion of Cladius, but the coins are of the same weights. In Ireland gold was fairly plentiful and silver so rare that the proportionate value was 1 to 3, a silver ounce being the value of an ox, and a gold ounce of a slave. A bronze coinage was not in general use in Britain until the invasion of Cæsar, although the substance had been used for the manufacture of implements during two previous ages.

From a remarkably correct manuscript of Cæsar of the tenth century we get the following : " Utuntur aut aere aut nummo aureo aut annulis ferreis ad certum pondus examinatis pro nummo." " They use either brass money or gold money or instead of money iron rings adjusted to a certain weight."

Bronze and tin coins are of a similar weight, 19-25 grains. They are very rough, and time has seriously obliterated the faces of the bronze. There is no evidence that tin coins were made in Britain, though tin was mined at so early a date in Cornwall. The few that are found are in Kent, and seem to be connected with a Channel Island currency. One is shown. There is a rough helmet on the obverse (if this is the right way up; which seems doubtful), and a still rougher horse on the other. It is evident, because the pattern is not clear cut, that these coins were not struck but cast in a mould, it may have been in some such manner as the following.

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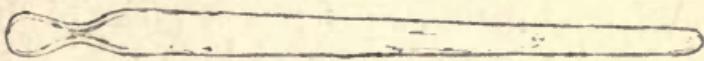
The artist prepares two blocks of fine hard stone and grinds down one surface of each until it is smooth and they can be fitted closely together. In one he carefully engraves with an iron graver several repetitions of the obverse of the coin. He fills in the hollows with plastic clay and presses the other block against it ; he pulls out the clay and judges whether the die will do. On the other block the marks of the red clay show him where to engrave the reverse designs, and perhaps he cuts a notch in the blocks to insure that they may fit correctly. He cuts a little groove joining the impressions, a groove as deep as the impressions and $\frac{1}{4}$ in. wide. Then he closes the two halves of the block very carefully, the groove reaches the top and is the only opening. He has some molten tin ready over his fire, he takes it and pours it down the little opening into the mould—it is to be hoped he does not burn his hands. He allows a little time for cooling, and presently when he opens the block he has several coins in a string. With his chisel and hammer he taps the connecting piece and it snaps across, or perhaps he bends it until it snaps—the fracture is quite rough. Then his tin coins are ready for circulation.

It is not surprising, when the tin coins were made in this way, that they vary somewhat in weight, 19 and 25 grains being the limits.

After iron had been in use for some time, it also came to be used as a medium for exchange. Iron rings of a definite weight are mentioned by Cæsar, very much like the Irish currency rings of gold. But another form of iron currency was common in

He uses Coins

late Celtic times. Numerous hoards of iron bars like that shown in the drawing have been found. At Meon Hill, Gloucester, 394, 30 in. long, were unearthed. At Malvern, in a dingle, 150 were dis-

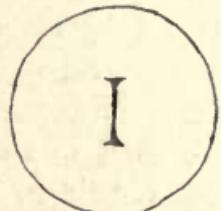


2 standard currency bar. 24 in. 8,969 grs.

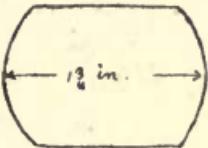


1/2 standard currency bar.

Wookey-Hole. Somerset.



Top,
incised with Roman I.



Bronze weight. 4770 grains.
Heath. Glamorgan.

covered rusted into a solid mass: Sometimes they have been preserved by a coating of carbonate of lime. Once a keeper found some while digging out a rabbit, and he took the greater part to the blacksmith, who made horseshoes out of them. This is very likely what sometimes happened in Celtic times.

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These iron bars are partly coterminous with the gold and silver coinage, and curiously enough are probably earlier than the bronze coins. They are of a regular size and weight. Four of them weigh about 4770 grains, and there are discoveries of weights to correspond : a bronze weight at Neath, Glamorgan, of 4770 grains, a similar one of basalt at Mayence of 4767 grains. A figure is given of the bronze weight ; it is marked with a Roman I. The Celtic standard appears to be one-half of the Attic commercial mina of 9236 grains, increased in 160 B.C. to 9975 grains. Our iron bars weigh generally about 8969, or roughly, twice the Celtic standard, and they vary in length from 22 to 34 in. But at Wookey Hole, Somerset, a quarter standard bar has been found, weighing only 1040 grains. These bars had long been a puzzle, but the discovery of the regularity of their weight, of the standard weights of 4770 grains at Mayence and Neath, and of the $\frac{1}{4}$ -standard bar at Wookey Hole, make it apparent that they had a fixed value and were used as a currency. The finding of secret hoards confirms this view. In times of danger men hid away these valuables and probably never lived to unearth them again. But it is likely that when needed the iron was put to any use : a $\frac{1}{4}$ -standard bar serves as a bucket-handle in Wookey Hole. Their shape suggests that the larger bars were wrought into swords —very heavy swords they would have been—but one or two of the Celtic examples in the British Museum look equally massive.

The average weight of a number of bars is near the standard, while individuals may show marked

He uses Coins

differences. Our blacksmith may be imagined to work in the following way.

He dwells near the mines, we may suppose, surface mines of hæmatite—there were many in England before they were exhausted ; he collects his ore and smelts it very likely in the following way.¹ With stones, he builds a round shaft or chimney on the ground anything from two to four feet in height, leaving two openings at the bottom, one for his bellows and the other for removing the metal. He makes a charcoal fire inside to warm the furnace and then drops into it layers of charcoal and crushed hæmatite and sets fire to the charcoal from below. He must have a pair of bellows (fascinating device) with a long nose to make an air blast, for without it the charcoal will not give a fire hot enough to reduce the oxide of iron. Hæmatite may be gathered in rounded nodules almost quite free from clay, but if there is any clay or stone present it melts and runs down in the form of “slag.” After four hours or longer a porous mass of grey iron is all that is left in the furnace and he rakes it out and finds it in a good condition for working with the hammer. Perhaps he has a standard weight equal to some even multiple of 4770 grains by which he measures his grey metal. Having obtained the amount he requires, he turns it out on his anvil stone and beats it into a long rod with his hammer. With his chisel he divides it into lengths of about 24 in., his practised eye judging the distances, but with no great accuracy. How he holds the iron to soften it in the fire again

¹ Practised by low-caste Hindus on the Deccan at the present day.

Child-Man in Britain

must be conjectured—he has scarcely evolved the double leverage of a pair of pincers. He hammers out each portion flat, rounds off one end and beats up a little handle at the other end by doubling the strip. It is now $1\frac{1}{2}$ in. wide tapering to $\frac{3}{4}$ in. at the tip, $\frac{1}{4}$ in. thick, and about 30 in. long, of roughly wrought iron. Having done, he throws his bar on a heap of finished material ready for the market.

Whether he works for himself or for his master we do not know. Whether he owns his surface mines, has staked a claim and got possession, or whether anyone who will may go and get what he will, we do not know. Possibly our blacksmith is merely a householder (or hut-holder) who has slipped on his leather apron and taken up his hammer to work at this particular branch of his manifold occupations. If so, he lives in an iron district, and having made all the knives, horseshoes, ox-hoof plates, nails, staples, hooks, bucket-hoops and handles that he requires, he now works up his spare iron into a shape and size suitable to exchange for the commodities he cannot himself obtain. Perhaps he sends some as a present to his chief for sword blades, with others buys spun thread for his wife to weave, corn for food, if his smelting and smithy occupy too much of his time, perhaps meat, or skins if he is not a good hunter. So begins the division of labour which has become such a saving of time (for idleness), of energy and expense, of mental effort and life-giving exertion too.

CHAPTER X

SOME BEGINNINGS OF SCIENCE AND WORSHIP

ON the barer uplands of this country one comes across monuments that have apparently no connection with the burial of the dead. On Dartmoor one finds here a stone-circle, there standing stones set in a row, in one place a granite cromlech, in another a solitary menhir. In a North Devon coombe,¹ I have seen a cromlech of three odd marble boulders with a fourth above, of white marble veined with green, and clothed with moss in all their crannies. In the shelter the sheep find protection from the rain when heather and bracken are drenched with it and the sea is grey beneath its lash. No path leads to it or enclosure encircles it. In South Wales² I found another half-buried on the side of a tumulus, three stumpy slabs of sandstone and a huge slab reared on their heads forming a low room whose floor is pitted with the hoofs and darkened with the dung of sheep. Not far off is another in a field. Yet no residents are interested in them and many do not know of their existence. On the Cleveland moors similar but less striking examples of standing stones may be seen in a brown waste of country—scarcely discernible in the landscape at a little distance. I mention only a few of the less striking examples. Stonehenge is, of course, the finest and most complete.

¹ Mortehoe.

² Near Barry.

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We have variations in the local architecture of our village churches, but these age-old monuments in their different forms are found in all the less cultivated parts of this country, and in many parts of the world. Composed of earth or of local stone, granite, marble, slate, sandstone, the stranded blocks of Sarsen stone, of curious origin, on Salisbury Plain ; they are seldom worked, merely stood up on end in a sunken socket in the earth, or heaved up to rest on standing stones with the expenditure of a great amount of human energy. They stand near the earth, from whose surface they were picked up, and only by luck or by reason of their massiveness have they persisted in spite of the destructive agency of weather or of practical civilized man. Superstition has been careful to preserve them, but civilized man has dared to steal the smaller stones and build his fences and his pig-sties of them before a higher knowledge evolved an understanding and reverence of antiquity.

Sir Norman Lockyer, after investigations in Egypt, turned his illuminating mind upon these British relics, carefully surveyed them and gave a very definite explanation of their usage.

The simplest monument consists of a straight embankment of earth. One such occurs in Stonehenge, from the centre of the temple to the north-east. It is of far greater age than the stone temple built around and over it, and even than the earth-circle which probably occupied the site before the stone-circle was erected. Next to this comes a row of standing stones, or two rows forming an avenue. At Challacombe, Dartmoor, there once stood eight

Science and Worship



Stone rows.
Merrivale Bridge.
Dartmoor.



Stone avenue.
Challacombe.

parallel rows ; most of the stones were used in local buildings and now only a part of three rows remain. At Borobridge, Yorkshire, the stone avenue assumes dignified proportions. It is nearly a mile long and

Child-Man in Britain

some stones are over twenty feet high ; at Shap an avenue is over a mile long.

Of different materials, of different heights, of varying numbers of rows, of varying lengths, there is one thing constant in these stone rows, namely, their direction. They point roughly to the north-east and south-west.

What is the meaning of this ? Why was our Child-man at such pains to register these points ? The oldest stone or earth rows are those indicating a declination of $16^{\circ} 20'$ N. and S. and an accurate determination of their direction with astronomical knowledge reveals that it points to the position of sunrise in May or November, perhaps 3000 years, perhaps more, before Christ. This gives us a suggestion of the great antiquity of reasoning man in Britain and of the enormous waste of time which has intervened between us and our earliest astronomers, time in which much of their work must have been lost. That so much remains is due to the fact that terror drove them to the woodless heights, while comfort invited later men to inhabit and cultivate the valleys and forget and neglect the works of their predecessors.

But what was the necessity of recording the position on the horizon of the May sunrise ? It is well-nigh impossible to conceive a clockless age, yet one can recall the importance that Locke or Milton attached to the teaching of astronomy, *for the purpose of judging the time*. The complete decline of general knowledge of the positions of the stars has followed the popularization of the timepiece.

In those early days on the dry uplands, with his

Science and Worship

shallow scratch-diggings, it may well have been that Child-man depended on a short swift season for the ripening of his scanty harvest. His seed-time in May, the sun would quickly ripen the grain on a well-drained shallow soil to a harvest not much delayed. But without a calendar, with no conception of weeks and months or of days in the aggregate, how should our Child-man know when it was safe to trust his seed to the ground or when he might expect the calving of his herds. Accumulated experience of losses of stupidity, against gains of sense, would indicate that at a certain point in the horizon the sunrise was propitious to the seed-time or the calving. A magic-man or priest, call him what you will, gains reputation by his judgment on such matters ; he sets up his earth-row or stone-row to guide him and oracularly tells his fellow-men when they should undertake the work. If possible he secretes his knowledge and grows in reputation. It is no wonder that the sun is worshipped, when fiery and splendid he gives heat and light to all, and, moreover, tells us when we must sow our seed. It is easy to conceive of the development of religious observance, of the sacrifice of a part of the seed-corn, or of the calf, and of presentations to the priest who gives good advice and saves from ill-judged planting and famine.

The year was probably a May-year defined by the sun's stations in May, August, November and February. The stone-row gives only the May and November positions ; stone-circles were arranged to give all. In any case it would seem that when a monument indicates the beginning of the

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May-year it is of greater antiquity than when it indicates the beginning of a solstitial year. The later monuments, stone-rows (alignments), or others which point to a mid-summer or mid-winter sunrise, i.e. a solstitial sunrise, probably originated with a desire for accuracy. The sun springs slanting from the horizon in May and sinks slanting at the opposite point in November; its position is very difficult to determine, it changes from day to day, but at the solstice (=standing) it descends more vertically and for three days rises at the same spot. It is easy with rough instruments to determine those days with accuracy, the sun is so definite in its movements.

A more complicated monument is the cromlech or dolmen. It is also one whose direction is very difficult to determine. The plan of the three standing stones forms three corners of a square, the fourth corner is represented by an opening, and this outlook is the direction for observing a sunrise, or other astronomical sign. The structure with its roofing stone is one which is found inside many barrows, put there very likely with the idea of housing or protecting the remains. In the cromlech it stands without a covering of earth. It is difficult to see the meaning of this connection. Does the priest-man live in the cromlech dead to the outside world, devoted to the observance and worship of the sun and stars? Many cromlechs have stone avenues leading to them, and these avenues form as accurate guides for the observance of particular sunrises as do the stone-rows. Some of these avenues are covered with horizontal stones resting on the pairs

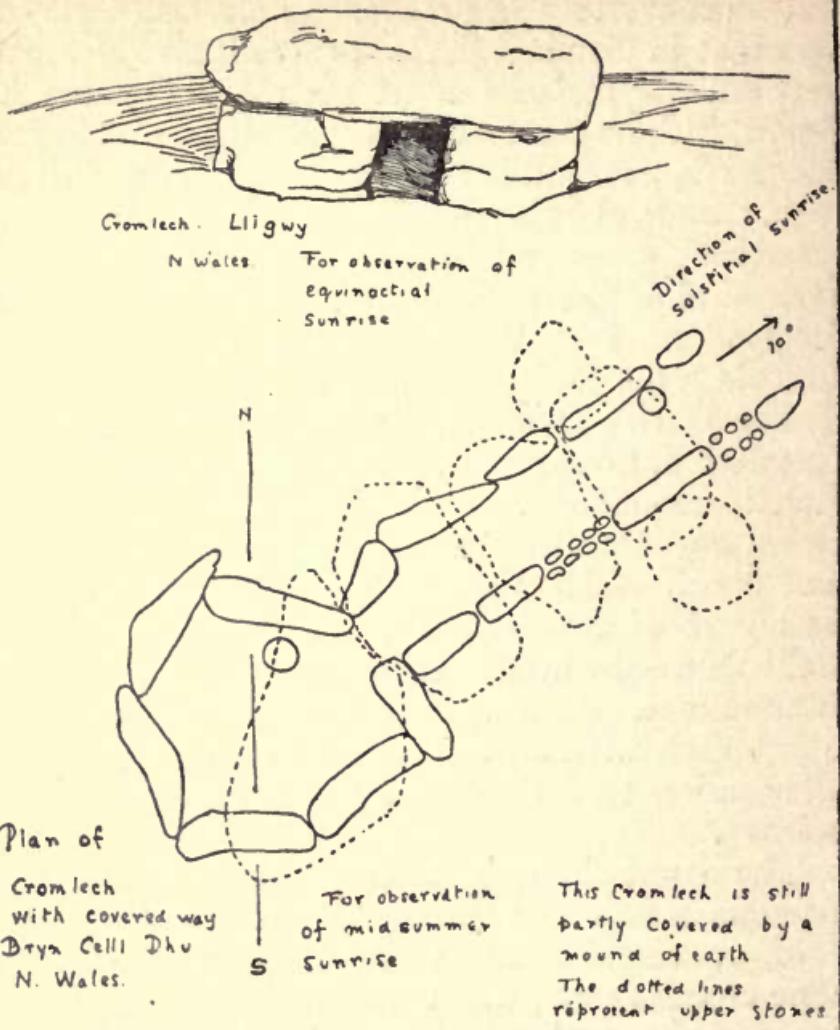
Science and Worship

of uprights. They were first noticed and named “allées couvertes” in France. Sir Norman Lockyer says that in plan and purpose there is no difference between the majestic stone temple of Thebes in Egypt, with its great stone avenue ornamented with colossal figures, and the cromlech of Britain with its little avenue of unhewn standing stones. In Egypt priestcraft grew and became kingly in power and tyrannical in its enthralment of the people; in England no such thing occurred, and the closed Cromlech temple is superseded.

The Devil’s Den near Avebury is an uncovered cromlech of three stones. The single covered cromlech is common—there is a fine one near Drewsteignton, Devon. In Cornwall, Devon, North and South Wales they are fairly numerous. The best covered cromlech with an avenue is at Bryn Celli Ddu—the avenue leads to the north-east to a May sunrise. At Maeshowe in the Orkneys there is a cromlech with an avenue inside a barrow. The alley points to a December sunset near the winter solstice.

The stone-circle is a much later monument, whether simple like Fernworthy Circle near Chagford, or complicated and double like Stonehenge. The cromlech or priest’s hole has disappeared, the place of observation is the centre of the circle. At Dorchester there is a ring of earthwork in two terraces known as Maunbury Ring. It is 218 ft. long and has a gap at each end of its slightly longer axis. The ground rises to the south-eastern gap, and here formerly stood an altar-stone. The orientation is similar to that of Stonehenge, and the

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stone catches the rising sun on Midsummer Day. As has been said before, in all probability an earth-circle preceded the stone-circle at Stonehenge.

The ring-shaped mound of earth or the ring of

Science and Worship

stones marks an horizon to the observer within, and outside the circle are to be found stones or mounds indicating particular positions on that horizon. The point of the solstitial sunrise is marked by one outstanding stone, the May sunrise and November sunset by another, the November sunrise by a third perhaps. The rising of certain constellations with the sun, i.e. an hour before sunrise, is also shown. Clock-stars rising near the northern point of the horizon and moving round the pole were no doubt observed, and their movement gave the time of night : they move through a quarter of their path in six hours. During the day the sun's movement was watched to measure the time. Some circles with their outstanding stone mark the November sunrise and the rising of the Pleiades with the sun in May.

The Botallek Circles in Cornwall, which have been destroyed since a careful antiquary mapped them, were highly complicated. They marked the May-year sunrise, the position of the clock-star, giving time at night ; the solstitial sunrises they gave also, and warning stones marked the position of the sun some twenty-one days before the solstice.¹

Later development of stone-circles, together with development of priestly knowledge of the heavens and of religious observance, led to the institution

¹ "Is it possible that the structure of the Roman Calendar with its 21 dies ante calendus and the ecclesiastical period of Lent, which was originally of three weeks duration, may have had their origin in stone-circle worship ?"

The Scottish quarter-days, May 15, August 1, November 11, February 2, belong to a May (or November) year. The English quarter-days suggest a solstitial year.

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of feasts or sacrifices at the important positions of the sun. It was necessary to prepare for these feast-days, and the warning-stones indicate the time when preparation should begin. The watching initiate sees the sunrise moving northwards day by day—he sees it touch the warning stone that the wise elders have erected—he waits till the orb rises fully behind the dark erect object and then gives notice to the people. Day by day the sun advances



to the solstitial stone, after twenty-one days it rises behind it for the first time—the feast is declared—for two more days the sunrise remains at the same point, and the feast is held. Sun-worship of some kind, of course, one says. But another opinion is also advanced. Namely, that instead of the sun being adored for his beneficial influences at the summer solstice, the goddess of the earth and fruition is mourned at the winter solstice. The stone-circle is a remnant of glorification of the barrow-covered cromlech and the altar-stone is the semblance of the dead Mother whom winter has

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temporarily destroyed. Worship and supplication will restore her to life again in due course. This view bears some weight when Stonehenge is considered—with its elaborate circle very like the grouped cromlech and the interiors of certain tombs ; but if the bare ring of earth or small stones with its outside marks is examined, it represents nothing to the investigator but a simple observatory. There is no architecture, merely a definite arrangement of simple stones for an astronomical end.

Connected with these simple observations, Childman and his priesthood must have evolved a love of sun and stars and of their influences—(is the moon too vagrant for consideration ?)—the soft influences of the Pleiades when it rises with the sun in May, and the varying influences of other star-groups which are known to have been observed by these child-like people. When the sun and stars gave warning of seed-time and harvest, of birth, of slaughter time, of the approach of dreaded winter, of the pleasant drawing on of summer, of the passage of the cold night hours, of the humanly appointed but none the less, after the manner of mankind, immovable sacrifice or feast, was it strange that they should be believed endowed with directive forces governing the frail destinies of men ?

CHAPTER XI

WEAPONS AND TOOLS, BROOCHES AND TOYS

THE making of the first bronze celt has been pictured, and it was of exactly the same form as the flint celt. The new metal was forced to serve an old need, much as modern cement is made to imitate stone, for we are only beginning to learn the possibilities of the new material. As time accumulated experience it was found no more difficult to make a celt with ridges or flanges at the sides, and later a transverse stop-ridge was added to give the axe greater firmness in hafting. The haft was of wood, and the bronze axe was fitted into a slit cut in a branch at right angles to the handle. Afterwards the axes were made socketed, and into the socket the wooden handle was fixed. The socket was formed by a conical projection into the top of the cavity of the mould. Three toy examples are shown from Ireland, as well as three other larger ones on the same page with a bronze shield and sword, the first being flanged with a stop-ridge, the second with a high stop-ridge and a loop for the thong that would bind it to the handle, the third being socketed and ornamented and possessing a loop as well.

A chronology of the Bronze Age has been suggested based on these features of evolution :

Weapons and Tools

First period.

Flat celts or axes.

{ 2500-2000 B.C.
Properly speaking
a Copper Age
except in Corn-
wall, where
copper is found
mixed with tin.

Second period.

Later types of flat axes.

Axes with slight side-flanges.

} 2000-1700 B.C.

Third period.

Axes with high side-flanges.

Beginnings of stop-ridges.

} 1700-1500 B.C.

Fourth period.

Axes with stop-ridges.

Early socketed axes or celts.

} 1500-1200 B.C.

Fifth period.

Later socketed axes.

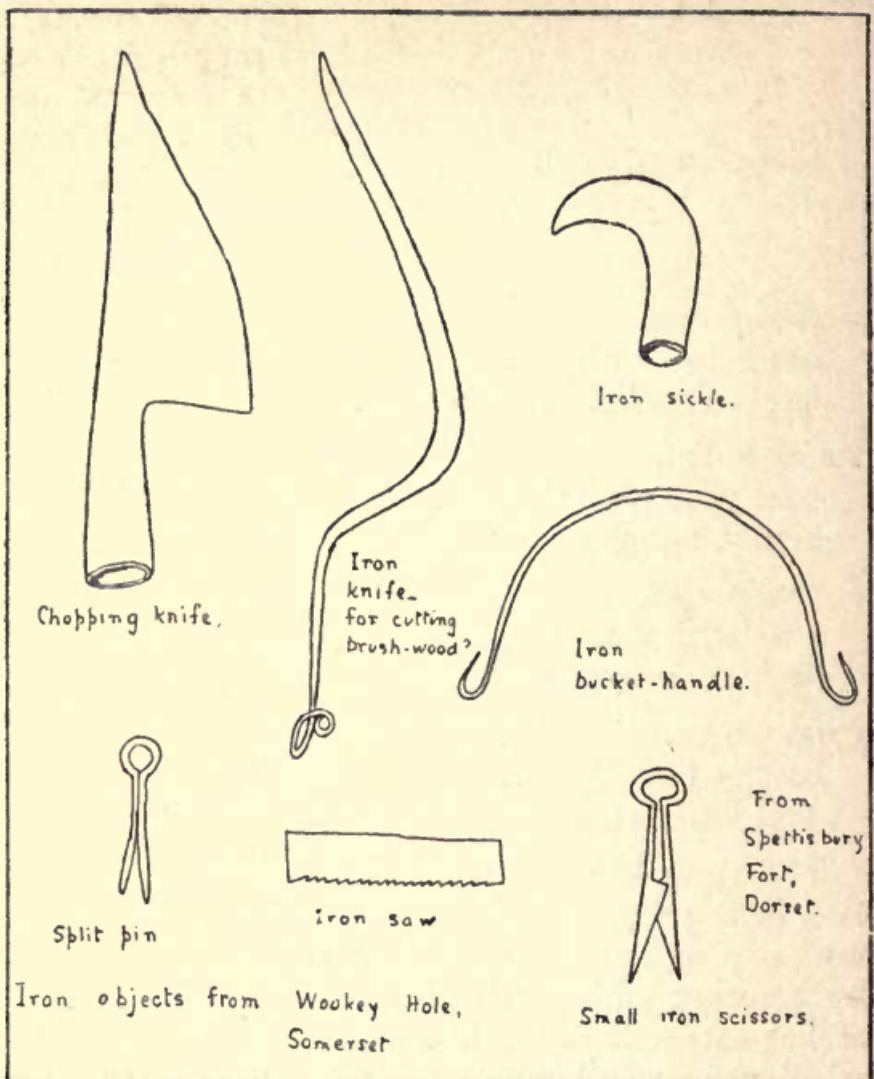
Axes with wings.

} 1200-900 B.C.

The spear-heads show a slightly similar progression from a flat form inserted into the handle by a tang to a socketed form fitted over the ashen handle by a socket with rivets to hold it in place. The earlier socketed forms had side-loops by means of which they were bound on to the handle by a thong of sinew.

The bronze was used also for shields and swords. The former were either of wood covered with thin bronze plates or of bronze outright, wrought up from a flat disc like the buckler shown, which is a handsome example of "repoussé" work, for the modelling of a

Child-Man in Britain



flat sheet into bosses gives it additional strength. The bronze sword shown on page 95 was cast in a mould, on which the grooves and slight modelling of its surface were marked. Afterwards it was ground on a whetstone to sharpen the edges and a wooden

Tools and Brooches

handle was riveted on the blade with the bronze handle passing through it like a long tang.

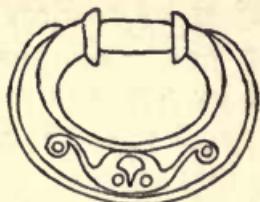
In the later bronze periods, especially in remote districts where iron did not naturally occur and where its introduction by traders was delayed, the bronze implements and weapons came to be of excellent form and workmanship, while the metal was also used with great success in the manufacture of articles for personal adornment. Such articles come from Ireland, the northern half of Britain and from Scandinavia, where bronze was much used in Celtic times. In the southern part of Britain bronze was retained in use for many purposes even after iron had been mined and smelted. As in earlier times, when the softer stones were used for all purposes where great strength was not essential, so now bronze was still used instead of iron wherever possible. Iron is more difficult to smelt, requiring a fiercer fire, which only a strong draught, supplied by chimney and bellows, can produce; when purified it still requires the heat of a blacksmith's forge to render it workable, and it has to be hammered into shape while red-hot. At the same time it is only iron that can provide the sharp and lasting edge to knife or sickle or the durability to ox-shoe, spade-shoe, or wheel-tyre.

But for buckets, bowls, spoons, and for brooches, shield ornaments, and harness-ornaments, bronze was retained. Its colour alone is decorative and it lends itself easily to engraving, or if the percentage of tin be small, to beaten-work in which the hammer is used to shape the cold metal. The introduction of the art of enamelling gave the opportunity for

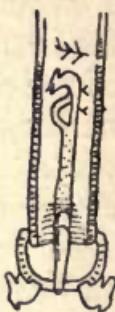
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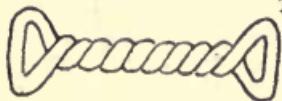
Plain
bridle-ring. Suffolk



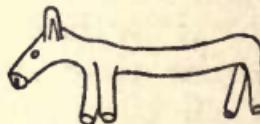
Decorated
bridle-ring. Celtic
Bronze + enamel.



Buckle with
horse-heads + strap.



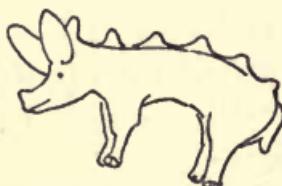
Twisted bit.



Horse made of bronze.
about 3 in.



Boar. Probably
a helmet crest.

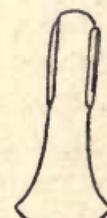


Boar.

Bronze
tongs
Heathery
Burn
Cave



Socketed
Celt.
Co Antrim



Palstave
9½ in
Celt
Co Down

Diminutive toy? weapons

Weapons and Tools

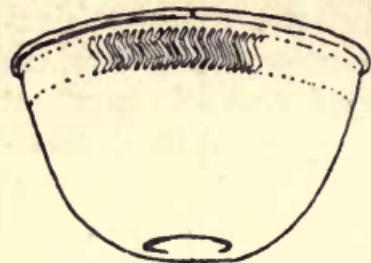
further artistic skill. Red enamel was the first to be discovered and used; it makes a rich combination with the yellowish red of the metal; afterwards blue and white were used together and in contrast with the red. Some of the designs are very intricate and beautiful, such as a modern craftsman might be happy to create.

Most of the ornament is designated as Celtic. It is considered to belong to a race of people who brought it and the Potter's wheel along with them in a great migration across Europe from the south-east, arriving first at our south-eastern shores. Of course their ornament may have travelled ahead of them with the traders along the great trade-routes, but in the Iron Age they are of very frequent occurrence in all parts of Britain.

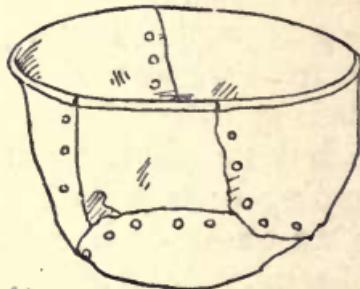
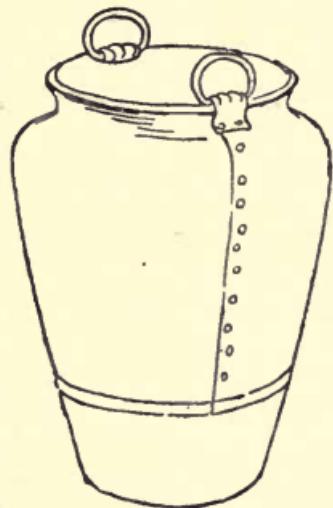
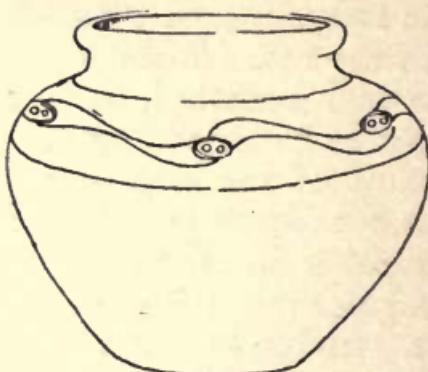
The wheel-made earthenware pot, p. 162, is from Wookey Hole, Somerset. It is of good shape and ornamented with an effective simple, sinuous design of characteristic "Celtic" curves. In this cave, which is described elsewhere, iron objects, including a chopping-knife, a bucket handle, a sickle, a curved blade, an ox-hoof plate, and a split pin, all of iron, were found. Some of these are figured. The pot is probably of the same period, as well as an iron saw and a neat little pair of scissors shaped with a curved spring after the manner of modern shears.

Of horse-trappings we find bronze bridle-rings, bits, straps, and buckles. The little horses so decked out must have presented quite a gay appearance. Two bridle-rings are shown, p. 160; one is plain with a straight side to take the strap and two small disk-shaped projections, perhaps to finish off the

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Bronze bowl diam.
Moorfields. London



junctions of two pieces of wire ; the other is broad and decorated by means of a raised pattern in bronze, the background being filled in with red enamel. The former may have been of an earlier period or belonged to a plain clansman, while the latter is

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undoubtedly late and very likely hung on the coloured straps of a chieftain's horse-harness. A small strap and buckle were evidently intended for grand occasions, for the buckle, though small, is decorated with a pair of little horse-heads cleverly cut out in bronze, and on the strap a design is drawn with a needle-point—of peacocks, it is suggested—at any rate, of curious birds with a little tree between them. There is a plain pony's bit of twisted bronze wire—did the unhappy animal suffer from a green mouth, or did he usually wear a rope halter and only endure the bronze on great days?

Three models of animals are shown. The first boar is shaped for a purpose, he will not stand and it is thought that he formed the crest on a chieftain's helmet. Bronze helmets are shown in the British Museum; they are of the Iron Age, made of sheets of bronze beaten into shape and secured by rivets. The other two are more natural—were they of religious import, or did they belong as playthings to some very fortunate child?

There are tongs from Heathery Burn Cave, Co. Durham, made of bronze, lanky in shape, about a foot long and very probably used for taking a crucible of molten bronze off the fire, for the metal was worked in the cave, casts for celts and tongs having been found there.

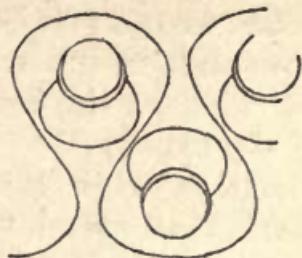
A wonderful bucket found at Aylesford has a fine frieze of embossed bronze work round the top. A detail of the design is shown; it is an adaptation of swans' heads in four spirals, with a central rosette form. The bucket has sockets for the handles in the form of human heads cast in solid bronze. Two

Child-Man in Britain

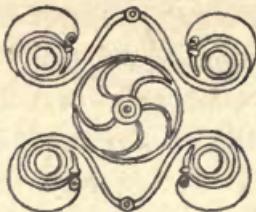
other embossed patterns are shown, one on a narrow strip of bronze about an inch wide, which may have decorated the front strap of a horse or more likely ornamented some wooden object, a bucket perhaps. A bronze bucket neatly riveted and of very graceful form was found in Ireland. A band about a quarter of the way up and the little handles with their sockets are the only ornament, but the curve of the sides renders decoration superfluous. The earlier bowls made of riveted pieces are of very crude shape and haphazard arrangement, the difficulty of hammering a bowl out of one sheet led to this device, which, when perfected, has very pleasing results. Hammered bronze may easily get thin and break at one point in the working. It is easier to make small sheets, model them by hammering on the centre and then to rivet them together. One small bowl beaten out of the solid is shown—it is strengthened at the top by an outcurved rim, and is ornamented by a pretty little design of Z's placed close together.

A block of pitch, a hammer and a round-headed nail, with a sheet of soft copper, would be sufficient to enable a boy or girl to practise beating the metal. In an untidy corner of the garden, or in the tool-shed on a wet day, leave them to do what they can with it. Shield, bowl, tray, spoon or tongs, bucket-hoop and handle—there are many things to make ; and the adult need not be disgusted with very crude beginnings, for experience teaches. Given some copper, or perhaps silver, wire and a pair of pointed wire pliers, the bucket-handle and the rivets would be supplied and many pretty little brooches and toys could be made. A real ring-brooch, firm and

Weapons and Tools



Ornament on
Bronze plate
Tower St. London.



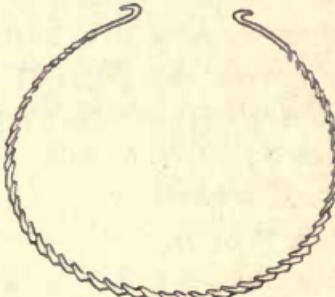
Part of frieze on
bronze bucket



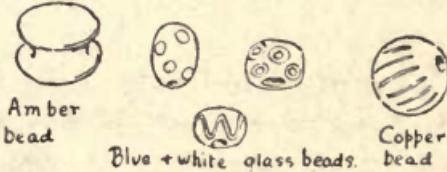
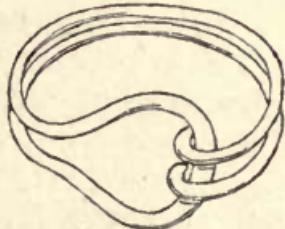
Embossed pattern
on strip of bronze.



Bronze with red (=white)
and blue (=black)
enamel.
Polden Hill. Somerset.



Torque of twisted wire
Quaintocks Somerset



Amber bead

Blue + white glass beads.

Copper bead

useful, a cloak-chain, twisted finger-ring, bracelet or tie-pin with a snaky head, similar to those described later. But, suggesting that they should make them, we should have to permit them to wear such things

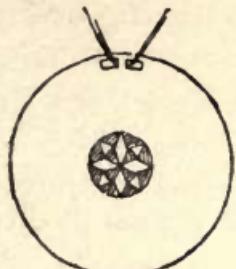
Child-Man in Britain

without shame, as half-civilized grown-ups do at the present day, whether of bronze in the rays of a southern sun or of gold and diamonds in our own ball-rooms by artificial light, for without the using there would be little pleasure in the making.

Personal ornaments for chieftains were made chiefly of gold in Ireland, where that metal was once extremely abundant in river-gravels. One such valley, overlooked by prehistoric workers, was discovered in the last century and caused quite a small gold rush until it was exhausted. The Irish museums abound in golden rings, brooches, torques, and even armour plates and helmets worn on state occasions, and probably many more have found their way into the melting-pot. But in England even chieftains had to be content with the less dazzling alloy, bronze, and it was used where only the precious metals are usually employed at the present day. A torque or twisted neck-ornament of bronze wire is shown from Somerset; the plain ends and increase in size of the turns towards the front make the design quite interesting. Thick bronze wire was used also for the armlet on the same page, composed of loop, double wire, and two hooks, and very pleasing.

The penannular brooch, in all probability used for securing a shawl in front, was the first form of this particular device. An open ring is easier to make from wire than a closed one, and if the ends of the open ring are curled or terminated by knobs, the result is more satisfactory, and so we get the various forms of the almost ring-shaped brooch. The pin is secured by being merely twisted round the ring,

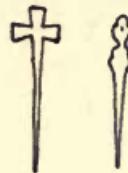
Tools and Brooches



Bronze disc
with pierced ornament.
Thames Hammersmith.



Bronze
pins. Cumberland
+ Suffolk.



Bone pins.



Bronze brooch with
enamel.



Brooch of two spirals
of wire.



Bronze eye
Suffolk.



Ring brooch with
pin. Co Antrim.



Penannular brooch.



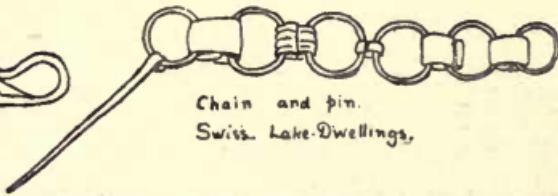
Ring of
thick wire.



Ring of fine
inter-twisted wire.



Bronze brooch. Co. Armagh.



Chain and pin.
Swiss. Lake-Dwellings.

and as it can be shifted about, the point could be slipped out between the opening, a fold of material taken up on it, and the whole secured by reshifting the pin into a position where the point rests upon

Child-Man in Britain

the ring. With a good fold of cloth in its grasp this brooch would stand little chance of coming undone. A later modification of the ring-brooch is shown from Co. Antrim. A complete ring is pierced by two holes and the pin is inserted through them. Perhaps novelty gave interest to this brooch when it was first invented, but it is by no means so useful or so pretty as the older form.

Pins were made of straight wire with ornamental heads, or of twisted wire or even still of bone, but in more complicated designs than formerly. A pin is shown fastened to a chain composed of rings linked together by little flattened bands. Such a chain was doubtless sewn to one side of a cloak, while the pin at the other end secured the other edge of the cloak. Very likely the pin point was made safe through one of the other rings when fastened.

A double twist of thick wire forms a finger-ring, and there is another of very intricate workmanship made of quite fine wire, the two ends of which interlace twice with each other and then coil snakily round the plain wire towards the back. Many modern rings are of clumsier design than this one, which is very well proportioned.

Twisted wire forms another brooch which is of a double spiral with two small loops in the middle—a weak point—one would say. The safety-pin brooch is a new device. One end of a piece of wire is thickened and curved to form a catch while the other forms the pin and the middle part is coiled round three, four, or more times to make a spring. A very simple example, but a very pretty one, is shown from Suffolk. The bow is here perfectly plain. Two

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others have an ornamented bow, one is broad and leaf-like, the other is high and round. In Italy these brooches were much modified and came to have extravagantly high bows or long pointed catches in a period which was the beginning of decadence. But in England the examples are of sane workmanship and pleasing, like these three.

Another little brooch is of bronze with red enamel, a raised piece above the catch is ornamented with little file marks, the centre is circular with a curved triangle of red enamel inside it.

A bronze plate with open-work in the centre was evidently hung round the neck by a cord, not a chain (our cloak-chain is one of the smallest and earliest examples of this device), and necklaces of beads were prized and have been found with many interments. Amber was highly valued, a stud-shaped bead of it was suspended by a cord tied about its middle. A copper bead is shown ornamented with striped incisions, and beads of blue and white opaque glass or porcelain must have been imported, very likely in exchange for produce from these islands. They may seem common enough at the present day, but scarcity gave them value, and the colours and the hand-process of making give them a certain charm which cheap modern beads lack altogether. These primitive boy-men, for they are now a good step on their way towards civilization, a step from which they are to retreat with the Roman conquest and the inflow of barbarian peoples afterwards, cared much about their dress, ornaments, jewels, and brooches, and took trouble to

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have them carefully adorned. With these pretty unperishable things it is certain that those things which have passed away were in keeping, and their woollen clothing was bleached in the sun or coloured by russet dyes and any others that they knew or could obtain by purchase, and that coloured needle-work gave beauty and variety to their garments.

It was an age of pageantry and brave shows of gleaming helmets, fairly wrought shields, glittering horse-harness and jewelled throat and head. If gold, how worshipful, if not gold then bronze, amber, blue bead or wooden bead steeped in dye, some bravery must be worn. And so these wise children made for themselves useful tools as they had need of them, and pretty toys for their own pleasure and diversion. We have watched them at their games, at their play-work, and at their inter-tribal bickerings, sham-fight or fight to the death, at any rate with equals—let us turn aside before the conquering nation puts them under its iron heel. And let us learn to be careful and kindly towards the Child-peoples of the earth, who have so much to teach us of our own childhood and our own children's hearts.



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